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AUTHOR INDEX

Abrams, Stanley	227	Luchins, Edith H.	1
Barocas, Ralph	271	Lukoff, Irving F.	135
Behringer, Richard D.	79	McDavid, John W.	41
Bell, Graham B.	15	Nelson, Paul D.	241
Byrne, Donn	251	Nidorf, Louis J.	165, 307
Cooper, Bernice	191	O'Neill, Marion	281
Crockett, Walter H.	165, 307	Palmer, George J., Jr.	65
Endler, Norman S.	147	Quinn, Patrick V.	23
Fagan, John	281	Rees, Norma S.	331
Fjeld, Stanton P.	297	Reynolds, Donald	127
Frye, Roland L.	95	Rosnow, Ralph L.	201
Gershaw, D. A.	155	Sadler, Orin W.	345
Gorlow, Leon	271	Schultz, Duane P.	31
Gunderson, E. K. Eric	241, 311	Schwartz, Milton M.	291
Hites, Robert W.	51	Sells, S. B.	65
Hoffman, B. J., Jr.	15	Shaw, Marvin E.	345
Horowitz, Leola S.	331	Simon, Walter B.	171
Horowitz, Milton W.	331	Sistrunk, Francis	41
Hyman, Bernard	73	Smith, Doyne M.	191
Johnson, Laverne C.	311	Stabene, Fred P.	323
Joshi, Vidya	101	Stephens, Marion L., Jr.	73
Krieger, Leslie	291	Strickland, Bonnie Ruth	353
Lacognata, A. A.	337	Stuart, Irving R.	209
Lana, Robert E.	201	Toch, Hans H.	127
Lawton, M. Powell	215	Vidulich, Robert N.	323
Littig, Lawrence W.	113	Whiteman, Martin	135
Lucas, Carol	257	Whittaker, James O.	91
Luchins, Abraham S.	1	Ziller, Robert C.	79

TABLE OF CONTENTS

Anchorage and ordering effects of information on personality impression By ABRAHAM S. LUCHINS AND EDITH H. LUCHINS	1
Attitudes toward the inter-office memo as a communication device By GRAHAM B. BELL AND B. J. HOFFMAN, JR.	15
Critical thinking and openmindedness in pupils from public and Catholic secondary schools By PATRICK V. QUINN	23
Theories of panic behavior: A review By DUANE P. SCHULTZ	31
Achievement motivation, affiliation motivation, and task difficulty as determi- nants of social conformity By FRANCIS SISTRUNK AND JOHN W. MCDAVID	41
Change in religious attitudes during four years of college By ROBERT W. HITES	51
Behavioral factors in disaster situations By GEORGE J. PALMER, JR. AND S. B. SELLS	65
Differences in general persuasibility to peer group pressure between Catholic high school and public high school students By BERNARD HYMAN AND MARION L. STEPHENS, JR.	73
Motivational and perceptual effects in orientation toward a newcomer By ROBERT C. ZILLER AND RICHARD D. BEHRINGER	79
Sex differences and susceptibility to interpersonal persuasion By JAMES O. WHITTAKER	91
Relationship between rated leaders and the traits assigned to these leaders By ROLAND L. FRYE	95
Personality profiles in industrial and preindustrial cultures: A TAT study By VIDYA JOSHI	101
Behavior in certain zero-sum, two-person games By LAWRENCE W. LITTIG	113
Perceptual correlates of prejudice: A stereoscopic-constancy experiment By DONALD REYNOLDS AND HANS H. TOCH	127
Attitudes toward blindness and other physical handicaps By MARTIN WHITEMAN AND IRVING F. LUKOFF	135
The effects of verbal reinforcement on conformity and deviant behavior By NORMAN S. ENDLER	147
The relation of order of recall to various measures of affect By D. A. GERSHAW	155
Cognitive complexity and the integration of conflicting information in written impressions By LOUIS J. NIDORF AND WALTER H. CROCKETT	165

The quest for subjective certainty	171
BY WALTER B. SIMON	
BOOKS	187
BOOKS RECENTLY RECEIVED	187
An analysis of certain aspects of teacher-pupil relationships as determined by teacher, pupil, and parent opinions	191
BY DOYNE M. SMITH AND BERNICE COOPER	
Complementary and competing-order effects in opinion change	201
BY RALPH L. ROSNOW AND ROBERT E. LANA	
Field dependency, authoritarianism, and perception of the human figure	209
BY IRVING R. STUART	
Personality and attitudinal correlates of psychiatric-aid performance	215
BY M. POWELL LAWTON	
The need system of college students	227
BY STANLEY ABRAMS	
Measurement of group effectiveness in natural isolated groups	241
BY E. K. ERIC GUNDERSON AND PAUL D. NELSON	
Authoritarianism and response to attitude similarity-dissimilarity	251
BY DONN BYRNE	
Task performance and group structure as a function of personality and feedback	257
BY CAROL LUCAS	
Value preferences and interpersonal behavior	271
BY LEON GORLOW AND RALPH BAROCAS	
A comparison of social-distance scores among college-student samples	281
BY JOHN FAGAN AND MARION O'NEILL	
The relationship between sociometric measures of popularity among children and their reactions to frustration	291
BY LESLIE KRIEGER AND MILTON M. SCHWARTZ	
A longitudinal study of sociometric choice and the communication of values	297
BY STANTON P. FJELD	
Measuring the connotations of personality traits: A validation study	307
BY LOUIS J. NIDORF AND WALTER H. CROCKETT	
Past experience, self-evaluation, and present adjustment	311
BY E. K. ERIC GUNDERSON AND LAVERNE C. JOHNSON	
Source certainty as a variable in conformity behavior	323
BY ROBERT N. VIDULICH AND FRED P. STABENE	
Attitudes toward deafness as a function of increasing maturity	331
BY LEOLA S. HOROWITZ, NORMA S. REES, AND MILTON W. HOROWITZ	
Faculty academic-role expectations	337
BY A. A. LACOGNATA	

Interaction patterns in heterosexual dyads varying in degree of intimacy .	345
BY MARVIN E. SHAW AND ORIN W. SADLER	
The prediction of social action from a dimension of internal-external control .	353
BY BONNIE RUTH STRICKLAND	
BOOKS RECENTLY RECEIVED	359

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5. A psychological study of juvenile delinquency by group methods—J. W. BRIDGES AND K. M. B. BRIDGES
6. The influence of puberty praecox upon mental growth—A. GESSLE

VOLUME 2—1927

- 1 & 2. The mind of a gorilla—R. M. YERKES
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4. Family similarities in mental-test abilities—R. R. WILLOUGHBY
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1. An experimental study of the olfactory sensitivity of the white rat—J. R. LIGGETT
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4. Responses of foetal guinea pigs prematurely delivered—G. T. AVERY
5. Objective differentiation between three groups in education (teachers, research workers, and administrators)—M. B. JENKINS
6. The effect of segregation on the sex behavior of the white rat as measured by the obstruction method—M. JENKINS

VOLUME 4—July-December, 1928

1. Observation and training of fundamental habits in young children—E. A. BOTT, W. E. BLATZ, N. CHANT, AND H. BOTT
- 2 & 3. Determination of a content of the course in literature of a suitable difficulty for junior and senior high school students—M. C. BUNCH
- 4 & 5. Methods for diagnosis and treatment of cases of reading disability—M. MONROE
6. The relative effectiveness of lecture and individual reading as methods of college teaching—E. B. GREENE

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1. The age factor in animal learning: I. Rats in the problem box and the maze—C. P. STONE
2. The effect of delayed incentive on the hunger drive in the white rat—E. L. HAMILTON
3. Which hand is the eye of the blind?—J. M. SMITH
4. The effect of attitude on free word association-time—A. C. EKDAHL
5. The localization of tactual space: A study of average and constant errors under different types of localization—L. E. COLE
6. The effects of gonadectomy, vasotomy, and injections of placental and orchic extracts on the sex behavior of the white rat—H. W. NISSEN

VOLUME 6—July-December, 1929

1. Learning and growth in identical infant twins: An experimental study by the method of co-twin control—A. GESSLE AND H. THOMPSON
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3. The acquisition and interference of motor habits in young children—E. MCGINNIS
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- 5 & 6. A study of the smiling and laughing of infants in the first year of life—R. W. WASHBURN

VOLUME 7—January-June, 1930

1. Tensions and emotional factors in reaction—E. DUFFY
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5. A study of the mental development of children with lesion in the central nervous system—E. E. LOUD
6. An experimental study upon three hundred school children over a six-year period—N. D. M. HIRSCH

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1. The amount and nature of activities of newborn infants under constant external stimulating conditions during the first ten days of life—O. C. LAWIN
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3. Language and growth: The relative efficacy of early and deferred vocabulary training, studied by the method of co-twin control—L. C. STRAYEN
4. Eye-movements and optic nystagmus in early infancy—J. M. MCGINNIS
- 5 & 6. Reactions of kindergarten, first-, and second-grade children to constructive play materials—L. FARWELL

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- 1 & 2. The status of the first-born with special reference to intelligence—H. H. HSIAO
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- 2 & 3. An experimental study of prehension in infants by means of systematic cinema records—H. M. HALVERSON
4. The limits of learning ability in kittens—A. M. SUEY
- 5 & 6. The effect of habit interference upon performance in maze learning—O. W. ALM

VOLUME 11—January-June, 1932

1. General factors in transfer of training in the white rat—T. A. JACKSON
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3. The reliability and validity of maze experiments with white rats—R. LEPPER
4. A critical study of two lists of best books for children—F. K. SHUTTLEWORTH
- 5 & 6. Measuring human energy cost in industry: A general guide to the literature—R. M. PAGE

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1. Family resemblances in verbal and numerical abilities—H. D. CARTER
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- 3 & 4. The growth of adaptive behavior in infants: An experimental study at seven age levels—H. M. RICHARDSON
- 5 & 6. Differential reactions to taste and temperature stimuli in newborn infants—K. JENSEN

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5. Eating habits in relation to personality development of two- and three-year-old children: A study of sixty-nine children in two nursery schools—A. A. ELIOT
6. Coordinating mechanisms of the spinal cord—O. C. INGEBRITSEN

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1. Mental growth during the first three years: A developmental study of sixty-one children by repeated tests—N. BAYLEY
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4. Limits of learning ability in the white rat and the guinea pig—B. F. RIESS
- 5 & 6. The limits of learning ability in rhesus monkeys—H. A. FIELD

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5. On intelligence of epileptic children—E. B. SULLIVAN AND L. GAHANAN
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2. The process of learning to dress among nursery-school children—C. B. KEY, M. R. WHITE, M. P. HONEIK, A. B. HINNEY, AND D. ERWIN
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2. Perceptual behavior of brain-injured, mentally defective children: An experimental study by means of the Rorschach technique—H. WERNER

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2. A clinical study of sentiments: II.—H. A. MURRAY AND C. D. MORGAN

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2. A continuation study of anxiety reactions in young children by means of a projective technique—M. DORNEY AND E. W. AMEN

A study of the vocational interest trends of secondary school and college women—A. M. CAWLEY

VOLUME 36—July-December, 1947

1. Maze test validation and psychosurgery—S. D. PORTEUS AND H. N. PETERS
2. The diagnostic implications of Rorschach's test in case studies of mental defectives—I. JOLLES

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VOLUME 38—July-December, 1948

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VOLUME 39—January-June, 1949

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VOLUME 42—July-December, 1950

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VOLUME 43—January-June, 1951

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VOLUME 44—July-December, 1951

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Genetic Psychology Monographs (continued)

VOLUME 46—July-December, 1952

1. The relationship of social status, intelligence, and sex of ten- and eleven-year-old children to an awareness of poverty—F. J. ESTYAN
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VOLUME 47—January-June, 1953

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Symptom correlates for descriptive diagnosis—J. R. WITTENBORN, et al.

VOLUME 48—July-December, 1953

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Personality and physical disease: A test of the Dunbar hypothesis applied to diabetes mellitus and rheumatic fever—D. H. CROWELL
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A critical review of the stability of social acceptability scores obtained with the partial-rank-order and the paired-comparison scales—S. A. WITVOLD AND G. G. THOMPSON
A study of the effects of color on Rorschach responses—G. G. BRODY

VOLUME 49—January-June, 1954

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The import for clinical psychology of the use of tests derived from theories about infantile sexuality and adult character—D. W. MILLS
Measuring personality in developmental terms: The Personal Preference Scale—M. H. KROUT AND J. K. TABIN

VOLUME 51—January-June, 1955

1. Some relations between techniques of feeding and training during infancy and certain behavior in childhood—A. BERNSTEIN
The expression of personality in drawings and paintings—L. H. STEWART
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The Lincoln-Oseretsky Motor Development Scale—W. SLOAN

VOLUME 52—July-December, 1955

1. Some personality correlates of sex, sibling position, and sex of sibling among five- and six-year-old children—H. L. KOCH
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VOLUME 53—January-June, 1956

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VOLUME 54—July-December 1956

1. A study of personality differences between middle and lower class adolescents: The Ssondi Test in culture-personality research—L. RAINWATER
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1. Academic performance and personality adjustments of highly intelligent college students—B. M. HORRALL
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Genetic Psychology Monographs (continued)

VOLUME 59—January-June, 1959

1. Freshman Rorschachs and college performance—C. R. SCHMIDLER, M. J. NELSON, AND M. BRISTOL
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VOLUME 60—July-December, 1959

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VOLUME 61—January-June, 1960

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VOLUME 62—July-December, 1960

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VOLUME 64—July-December, 1961

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VOLUME 65—January-June, 1962

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VOLUME 66—July-December, 1962

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VOLUME 67—January-June, 1963

1. Verbatim dialogue of a mother and child in therapy—C. E. MOUSTAKAS
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VOLUME 68—July-December, 1963

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(Manuscripts are printed in the order of final acceptance)

Anchorage and ordering effects of information on personality impression	1
BY ABRAHAM S. LUCHINS AND EDITH H. LUCHINS	
Attitudes toward the inter-office memo as a communication device . . .	15
BY GRAHAM B. BELL AND B. J. HOFFMAN, JR.	
Critical thinking and openmindedness in pupils from public and Catholic secondary schools	23
BY PATRICK V. QUINN	
Theories of panic behavior: A review	31
BY DUANE P. SCHULTZ	
Achievement motivation, affiliation motivation, and task difficulty as determinants of social conformity	41
BY FRANCIS SISTRUNK AND JOHN W. McDAVID	
Change in religious attitudes during four years of college	51
BY ROBERT W. HITES	

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Behavioral factors in disaster situations	65
BY GEORGE J. PALMER, JR. AND S. B. SELLS	
Differences in general persuasibility to peer group pressure between Catholic high school and public high school students	73
BY BERNARD HYMAN AND MARION L. STEPHENS, JR.	
Motivational and perceptual effects in orientation toward a newcomer	79
BY ROBERT C. ZILLER AND RICHARD D. BEHRINGER	
Sex differences and susceptibility to interpersonal persuasion	91
BY JAMES O. WHITTAKER	
Relationship between rated leaders and the traits assigned to these leaders	95
BY ROLAND L. FRYE	
Personality profiles in industrial and preindustrial cultures: A TAT study	101
BY VIDYA JOSHI	
Behavior in certain zero-sum, two-person games	113
BY LAWRENCE W. LITTIG	
Perceptual correlates of prejudice: A stereoscopic-constancy experiment	127
BY DONALD REYNOLDS AND HANS H. TOCH	
Attitudes toward blindness and other physical handicaps	135
BY MARTIN WHITEMAN AND IRVING F. LUKOFF	
The effects of verbal reinforcement on conformity and deviant behavior	147
BY NORMAN S. ENDLER	
The relation of order of recall to various measures of affect	155
BY D. A. GERSHAW	
Cognitive complexity and the integration of conflicting information in written impressions	165
BY LOUIS J. NIDORF AND WALTER H. CROCKETT	
The quest for subjective certainty	171
BY WALTER B. SIMON	
BOOKS	187
BOOKS RECENTLY RECEIVED	187

ANCHORAGE AND ORDERING EFFECTS OF INFORMATION ON PERSONALITY IMPRESSION*

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This is another report of a series of studies of impressions of personality that are based on conflicting information about an individual. We are interested in the effects on the nature and stability of the impression of various initial anchorages as well as in the effects of various orders of presentation of the information.

A. PROCEDURE AND SUBJECTS

Each communication described the behavior of a hypothetical individual named Jim. The communications were taken from a series of 11 paragraphs, the first of which described highly extravertive behavior and the last of which described highly introvertive behavior. The intervening paragraphs were arranged in a kind of "continuum" in which extravertive behavior decreased and introvertive behavior gradually increased (5). For the present study, two of these paragraphs were combined in a single communication (one immediately after the other) without a paragraph indentation between them. In this way, we combined Paragraphs 1 and 11, 2 and 10, 3 and 9, 4 and 8, 5 and 7. Each of these five combined communications contained conflicting information since one part described introvertive behavior and the other described extravertive behavior. The greatest conflict was in Communication 1 and 11 (composed of the first and last paragraphs of the series). The least conflict was in Communication 5 and 7. When given in the order 1 and 11, 2 and 10, 3 and 9, 4 and 8, 5 and 7, the communications will be designated as the Converging Series since the discrepancy between the component parts of the communication decreases and the two blocks that compose the communication converge toward each other. When given in the reverse order (5 and 7, 4 and 8, 3 and 9, 2 and 10, 1 and 11), the communications will be designated as the Diverging Series since the discrepancy between components of the communication increases and the component parts diverge.

The experiment was administered individually to 60 college students who had volunteered for an experiment on forming impressions of personality. They

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were told that the test was not a test to evaluate them, but was a study on how people form impressions from what they read about others. After *S* was put at ease, and the instructions were clarified, he was given a description of Jim. This description will be called the anchorage paragraph. Those *Ss* who received a description of highly extravertive behavior as an anchorage paragraph will be called Group E (Extravertive-Anchorage Group). Those *Ss* who received a description of highly introvertive behavior as an anchorage paragraph will be called Group I (Introvertive-Anchorage Group). Those *Ss* who received a rather neutral paragraph, a paragraph that depicted Jim as neither an introvert or extravert, will be called Group N (Neutral-Anchorage Group). The neutral paragraph was the sixth (or middle) paragraph of the original series and had not been used in making the combined communications. There were 20 subjects in each of the groups E, I, and N.

Half of the *Ss* in each group received the Converging Series. The other half received the Diverging Series.

After the anchorage paragraph, *S* was given a questionnaire to answer on the basis of the impression he had formed of Jim. The questionnaire, which will be described briefly below, has been described in detail by Hovland (2). After *S* completed the questionnaire, he received the Converging (or Diverging) Series. As soon as he finished reading the first communication of the series, *S* was again asked to answer the same questionnaire. After completing the questionnaire, he was given the next communication in the series, followed by the questionnaire again. After the series, *S* was again given the same anchorage paragraph that he had read initially and again answered the questionnaire; thus *S* answered the same questionnaire seven times.

In the first task of the questionnaire, *S* had to write a short paragraph to describe his impression of Jim. In the second task, he had to list four or five adjectives that best described Jim. In the next eleven tasks, *S* was asked to predict Jim's behavior in various social situations. Then *S* was asked to rate Jim on each of the following pairs of traits: friendly-unfriendly, shy-forward, social-unsocial, aggressive-passive. Finally, *S* was asked to complete three sentences that would indicate what Jim would do in certain situations. After each task, *S* was asked to rate how sure he was of his answer and to do this using a five-point scale.

The time that *S* took for each questionnaire was recorded. The more often the questionnaire was given, the less was the time taken to respond to it.¹

¹ In a similar study in which *S* had only to write three adjectives after each communication to indicate his impression (instead of using the questionnaire of the present study), it was found that those who received the Divergent Series tended to take more time to respond to each communication than those who received the Convergent Series.

Some Ss took 20 minutes for the questionnaire when it was first given, but only eight minutes on its last administration, on which administration they seemed to perform in a more perfunctory manner and with shorter answers. Some Ss complained about the length of the experiment. A few Ss said, as they neared completion of the experiment, that they wanted "to get it over with."

The introvertive paragraph (the initial communication in Group I) was taken as the definition of introvertive behavior and as such served as a reference point from which to assess Ss' responses. The kind of responses that predominated on the first questionnaire after Ss read the introvertive paragraph, was considered to be the introvertive type of response and was used as a standard to evaluate the responses to the other questionnaires. [See Hovland (2) for a detailed description of the method of scoring responses.] The per cent of introvertive responses was computed for each group for every task of each of the questionnaires. These per cents are the basis of our results.

B. EXPECTATIONS

What is known about primacy effects (2) and the influences of frames of reference on judgment and perception (7) suggest that the initial communication would act as an anchorage or frame of reference from which Ss would view subsequent communications, particularly those which came just after the anchorage paragraph. For reasons to be described below, our expectations with regard to results are as follows.

1. Introvert responses would decrease or at least not increase (i.e., would decrease monotonically) from Group I to N to E.
2. Group E would show more stability and less variability in responses. Ss of Group E would be more sure of their responses than would the Ss of the other groups.
3. Introvert responses would be fostered more by the Diverging Series than by the Converging Series.
4. Anchorage effects would be greater for the Converging Series than for the Diverging Series.

We reasoned that the "introvert" anchorage received by Group I would be most effective in fostering "introvertive" responses and that the anchorage received by Group E would be most effective in fostering "extravertive" responses. This is the basis of our first expectation.

Expectation No. 2 is based upon our previous research findings: namely, that there is some tendency to regard extravertive behavior as more normal and adjustive than introvertive behavior. We have also found a tendency to regard it as normal for an individual to be predictable and consistent in his

behavior. Group E, having received an extravertive-oriented anchorage, might be more likely to regard Jim as normal, consistent, and predictable and therefore might be more consistent or stable and less variable in their own answers about Jim and also surer of their answers. Because the Diverging Series becomes increasingly inconsistent, it might foster an impression that Jim is an inconsistent individual and, since inconsistency seems to be related to introvertive kinds of responses in our research, we would expect more introvertive responses in the Diverging Series. This is the basis for Expectation No. 3.

There is evidence that a frame of reference or social norm may have stronger influences on an ambiguous than on an unambiguous object of judgment (6, 7). If the inconsistent communications are regarded as ambiguous, then the anchorage would exert a stronger influence when it is followed immediately by the pairs of very inconsistent communications than by the more consistent ones. This is the basis for Expectation No. 4.

C. RESULTS

Table 1 presents the per cents of introvertive responses made by each group to the various tasks on the seven administrations of the questionnaire. To shorten the presentation in the table of the predictions made to the 11 situations, we present the mean of all I responses to give a rather rough picture of the trend of results in these tasks. In reading the table it should be remembered that responses that were not scored as introvertive tended to be extravertive in nature for Group E, and to some extent for Group I, but less so for Group N. Many of Group N's responses were noncommittal or vague and could not be scored as either introvertive or extravertive on the basis of our criteria.

Expectation No. 1 was that introvertive responses would decrease monotonically from Group I to N to E. Analysis of the data in Table 1 supports this expectation. In the Diverging Series, such decreases were found in the first task on six of the seven questionnaires (the exception was on the questionnaire after communication 1 and 11). In the second task, such decreases were found on six questionnaires (the same exception). They were found in the shy-forward task on six questionnaires (the exception after 4 and 8). They were found in the sentence-completion task on five questionnaires (exceptions after 2 and 10 and 1 and 11). And they were found in the prediction tasks on six questionnaires (exception after 3 and 9). Of the 35 comparisons (five kinds of tasks and seven questionnaires) for the Diverging Series, the results were as expected in 29 of the 35 (or in 83 per cent) of the comparisons. There were six exceptions to the trend. Four exceptions occurred after the most in-

consistent communications: 1 and 11 and 2 and 10. No exceptions to the trend occurred after the most consistent communications.

In the Converging Series, decreases or monotonic decreases from Group I to N to E were found in the first task on six of the seven questionnaires (exception after 2 and 10). They were found in the second task on six questionnaires (same exception). They were found in the shy-forward task on all seven questionnaires. They were found in the sentence-completion task on five questionnaires (exceptions after 2 and 10 and 1 and 11). And they were found in the prediction tasks on four questionnaires (exceptions after 4 and 8, 3 and 9, 2 and 10). In short, for those who received the Converging Series, the results were as expected in 28 of the 35 (or in 80 per cent) of the comparisons. Note that again most of the exceptions occurred after the most inconsistent communications.

Another way of studying anchorage effects is to compare two groups at a time. Expectation No. 1 implies that positive or zero differences should result when the per cent of introvert responses in Groups E or N is subtracted from the corresponding per cent in Group I. Analysis of the data in Table 1 shows that, for the Diverging Series, introvertive responses in Group I minus the per cent in Group E yields positive differences on all seven questionnaires in the prediction tasks and six positive and one zero difference in the other tasks. The mean differences are 49, 64, 46, 31, and 25 per cent respectively for the five tasks in Table 1. In the Converging Series, there are seven positive differences in each of the tasks except in the prediction tasks for which there are six positive differences and one small negative difference (five per cent). Mean differences are 74, 70, 73, 57, and 39 per cent respectively for the five tasks.

Comparison of Groups I and N, or of Groups N and E, yields differences that are mainly in line with expectations. Group I minus Group N yields 26 positive differences, four zero differences and five negative differences in the Diverging Series; and 30 positive differences, two zero differences, and three negative differences in the Converging Series. The mean differences are 29, 50, 27, 10, and 16 per cent in the Diverging Series and 57, 55, 37, 40, and 11 per cent in the Converging Series for the five kinds of tasks respectively. Group N minus Group E yields 31 positive differences, two zero differences, and two negative differences in the Diverging Series; and 27 positive differences, four zero differences, and four negative differences in the Converging Series. The mean differences are 21, 14, 19, 21, and 21 per cent in the Diverging Series, and 11, 16, 36, 17, and 26 per cent in the Converging Series for the five kinds of tasks respectively. Again, the comparisons indicate that introvertive responses were made most often after an introvertive initial com-

munication and were made less often after a neutral initial communication, and were made least often after an extravertive initial communication.

Expectation No. 2 was that Group E would be less variable and more stable in their responses than would the other groups. Examination of Table 1 reveals greater stability for Group E. These extravert-oriented subjects persisted in extravertive responses in the face of the changing communications, whereas the introvert-oriented subjects (members of Group I) readily changed their responses upon the presentation of material that conflicted with their initial impressions. One rough index of variability is the range of responses that a group made in any one task on the seven questionnaires. This index pointed to less variability in Group E since the mean range of responses in a task was 30 per cent for Group E, 40 per cent for Group N, and 62 per cent for Group I. (Group N was more variable than this index suggested since many of their responses could not be categorized as introvert or extravert in terms of our criteria.)

Another index of stability is obtained by comparing administration and re-administration of the anchoring communication. Many Ss, particularly in Group E, rated Jim (in the last questionnaire) exactly as they had rated him in the first questionnaire—i.e., notwithstanding the intervening series, the per cents of introvertive responses were similar on the last questionnaires to the per cents of introvertive responses on the first questionnaires. That this trend was most pronounced for Ss of Group E indicates the greater stability of their responses. In Group E, the differences in introvertive responses between the first and last questionnaires were zero, zero, zero, zero, and five per cent for the Diverging Series on the five kinds of tasks and zero, zero, zero, zero, and eight per cent for the Converging Series. In Group I, the corresponding differences were zero, zero, 20, —40, and five per cent for the Diverging Series and zero, zero, zero, 40, and zero per cent for the Converging Series. In Group N, the differences were —10, —50, zero, —20, and 10 per cent for the Diverging Series and zero, —10, —10, 20 and zero per cent for the Converging Series. The means of the absolute values of the differences (magnitude but not sign taken into account) for the Diverging Series and Converging Series, respectively, were only one and two per cent for Group E, 13 and eight per cent for Group I, and 18 and eight per cent for Group N.

Expectation No. 2 also suggested that Group E would be surer of their responses. It may be recalled that, after each task of the questionnaire, S had to rate how sure he was of his answer. Sureness of impression was assessed in terms of the per cent of Ss who reported that they were sure of their answers or were more sure than unsure. Group E had the highest per cent of sureness

ratings, with Group I lower, and Group N the lowest. For example, the per cent of Ss who reported that they were sure of their answers to the first task or were more sure than unsure averaged 92 per cent for Group E (ranging from 80 to 100 per cent in the various questionnaires), 63 per cent for Group I (ranging from 40 to 100 per cent), and only 24 per cent for Group N (ranging from 0 to 40 per cent).

Similarly, in the second task the corresponding per cents averaged 93 per cent for Group E (ranging from 80 to 100 per cent in the various questionnaires), 83 per cent for Group I (ranging from 40 to 100 per cent), and only 19 per cent for Group N (ranging from zero to 50 per cent).

Expectation No. 3 was that introverted responses would be found more often in the Diverging Series than in the Converging Series, but Expectation No. 4 was that anchorage effects would be greater in the Converging Series than in the Diverging Series. Expectation No. 3 suggests that positive differences would result when, from the per cent of introverted responses in the Diverging Series there is subtracted the corresponding per cent in the Converging Series. Expectations Nos. 3 and 4, together, suggest that there should be more pronounced positive differences in Groups E and N than in Group I because the anchorage effect may be regarded as working to strengthen the effect of the order of presentation in Group E and to a lesser extent in Group N, but as working in an opposing direction in Group I. Specifically, in Group I a greater anchorage effect in the Converging Series would foster more introverted responses in this series and would offset a tendency for the Diverging Series to foster introverted responses. In Group E, however, and to a lesser extent in Group N, the anchorage effect should foster more extraverted responses in the Converging Series than in the Diverging Series. Introverted responses would therefore be more frequent in the Diverging Series, as a result of the anchorage effects.

When the per cents of introverted responses in the Converging Series were subtracted from corresponding per cents in the Diverging Series, positive differences predominated (but, unlike that which Expectation No. 3 suggested by itself, not all the differences were positive). Of the 105 differences, 50 were positive, 30 were negative, and 25 were zero. As predicted, the trend for positive differences was greater in Group E and in Group N than in Group I. Group E had four times as many positive as negative differences: 16 positive, four negative, 15 zero. Group N had about twice as many positive as negative differences: 21 positive, 10 negative, four zero. In contrast, Group I had more negative than positive differences: 13 positive, 16 negative, six zero. Of the 15 mean differences, 11 were positive, two were negative, and two were zero.

The mean differences for the five tasks, in the order listed in Table 1, were 13, 12, 17, zero, and six per cent for Group E; 23, 9, zero, six, and one per cent for Group N; one, six, minus one, -20, and six per cent for Group I. The results suggest that the anchorage effects in Group I may have been as great or greater than the effects of the order of presentation.

Before we leave the quantitative results, it is of interest to compare responses to the initial questionnaire and to the next-to-the-last questionnaire: i.e., to compare the first questionnaire with the one that came just after the Diverging (or Converging) Series and before the readministration of the anchor paragraph. The results suggest that the series of communications, whether diverging or converging, tended to modify the influence of the initial anchorage, resulting in a decrease in introvertive responses in Group I and an increase in Groups E and N. Considering the Diverging Series, we find that on the five tasks, in the order listed in Table 1, Group I showed decreases in introvertive responses of 60, 40, 60, 20, and 50 per cent from the first questionnaire to the questionnaire after 1 and 11. Group E, however, showed increases of 40, zero, 20, 20, and 20 per cent. Likewise, Group N showed increases of 40, 30, 10, 30 and zero per cent. Considering the Converging Series, and comparing responses to the initial questionnaire and the one after 5 and 7, we find that Group I showed decreases in introvertive responses of 40, 40, 40, and 30 per cent; but an increase of 20 per cent on the shy-forward task. Group E showed increases of zero, 10, zero, zero and 10 per cent. Group N was more variable and showed increases of 30, 10, and five per cent in the first two tasks and the prediction task respectively, but decreases of 20 and 10 per cent in the remaining tasks. For the Diverging Series, the mean changes were 46, 20, and 22 per cent for Groups I, E, and N respectively. For the Converging Series, the means of the absolute value of the changes (with only the magnitudes taken into account and not whether they were increases or decreases) were 34, two, and 15 per cent for Groups I, E, and N respectively. Note that both for the Diverging Series and Converging Series, Group E had the smallest change: i.e., the most stable results. This again may testify to the tenacity with which these *Ss* adhered to the extravertive orientation. Note also that the changes were smaller for the Converging Series perhaps because, in line with expectations, initial anchorage effects were stronger in this series; i.e., a stronger anchorage effect could better resist the modifying influence of the series.

D. DISCUSSION

Since the experiment was conducted for each *S* individually, it was possible to keep a detailed record of *S*'s comments and behavior during the experiment.

Also, at the conclusion of the experiment each *S* was asked several questions. The answers to these questions and the comments will serve as a basis for our discussion of the results.

Each *S* was asked whether or not he was aware that he had been reading "contradictory or conflicting statements." With the exception of one *S*, all said that they were aware of this. Many *Ss* used the term "contradictory" in the comments that they made spontaneously during the experiment. It is important to note that the communications were not contradictory in the sense in which this term is used in formal logic. *Ss'* comments indicate that the communications were judged to be contradictory because Jim was not consistent in his behavior. These comments suggest that what is considered to be a "contradiction" may be related to social norms. The social norm of consistency and predictability of behavior led *Ss* to judge the communications as contradictory. The communications "contradicted" *Ss'* conception of a person as one who behaves consistently. Incidentally, the one *S* who said that he was not aware that he had been reading contradictory or conflicting statements said that two different aspects of Jim had been described but he apparently did not regard the statements as contradictory.

When *Ss* were asked which communication was most contradictory, most *Ss* said that Communication 1 and 11 was most contradictory. Some selected 2 and 10 and 3 and 9 as most contradictory. It will be recalled that the series of communications was so constructed that there was a decrease in the disparity of the components of the communications as one went from communication 1 and 11, to 2 and 10, to 3 and 9, etc. Thus *Ss'* answers reflected the actual nature of the communications.

When *Ss* were asked which communication was least contradictory, there were group differences in their answers. Group I usually selected the anchor. Group E usually selected 5 and 7 and 4 and 8. Some *Ss* in Group N selected 4 and 8 or said that they were not sure which was the least contradictory communication. Here we see the operation not only of the structure of the particular communication but also of the particular anchorage.

Ss were also asked which communication gave them the least trouble in their attempts to get a clear impression of Jim and which gave them the most trouble. Most *Ss* selected the anchor paragraph and some selected 5 and 7 as *least* troublesome. Both of these communications had little discrepant information. When asked which communications were *most* troublesome, most *Ss* in Group I selected the last communication: i.e., the readministered anchor paragraph that contained little discrepant information. However, *Ss* in Group E selected 3 and 9, 2 and 10, and 1 and 11 which were actually the most in-

consistent communications. Ss of Group N also selected those as well as the initial and readministered anchors. Here we see that the sensing of difficulty may have depended on the nature of the communications and on the nature of the anchor. It is of interest that some Ss of Groups I and N found consistent communications (the neutral anchor and the readministered anchor) to be more troublesome than the inconsistent communications.

Finally, Ss were asked to account for the inconsistencies in Jim's behavior. Usually they attributed these variations in behavior to differences in the situations or circumstances in which the behavior occurred or to the effects of certain previous experiences (e.g., "Jim had an off night") or to the effects of the mood Jim was in. Many Ss said that Jim's "basic personality" or "real self" or "true nature" was the same even though his behavior changed. Such explanations were given by 80 per cent of the Ss in Group E and by fewer Ss in the other groups. Some Ss in Group E explained that they refused to attribute introvertive behavior to Jim because "it contradicted the impression (they) wanted to keep of him." Even Ss in Group N and I referred to Jim's "basic personality" as rather extravert. It seemed that the "basic personality" was manifested only when Jim was social, outgoing, friendly, etc. This result is in line with our conjecture that extravertive behavior is considered to be the "normal" behavior in our society. To this extent our results support the hypothesis that a person is a reflection of the society's culture—i.e., to be a "normal person" is to reflect what is considered to be a person in one's society (1).

In some unpublished studies in which the only information given about Jim was his name, answers to the questionnaire also reflected a conception of Jim as extravertive. This evidence, and other evidence (8), suggests that the conception of the "average," "normal," or "adjusted" individual in our society is that of an extravert, in the sense of being friendly and social. It is of interest to speculate on the extent to which the results in the just-mentioned unpublished studies and in the present study are a function of the utilization of the name "Jim." What would have happened if we had used the name James rather than its diminutive? How would the results compare if we had used a neutral symbol that did not suggest the sex of the person or if we had used names of high and low status, formal or informal names?

Subjects' comments, during and after the experiment, suggest that Ss of Group E maintained the same conception of the "real Jim" throughout the communications. However, for many subjects of Group I, their conception of the "real Jim" seemingly changed from introvert to extravert. Immediately after the initial extravert and introvert anchors, the Ss of the E and I groups

had different impressions. Ss in Groups E and I tended to see the "real Jim" as the anchor portrayed him. But, toward the end of the Converging or Diverging Series, it was not unusual for Ss in all groups, regardless of how their impression was initially anchored, to attribute Jim's introvert behavior to causes or forces outside of Jim, explaining that he was "not himself" or that such behavior did not reflect his true nature or that the behavior was due to particular circumstances.

We might characterize the difference between Groups E and I in the following manner. Immediately after the extravert anchor, the universe of Jim's behavior was usually seen to be composed solely or mainly of the class of extravert behavior, and the "real Jim" was placed in this class. The class of introvert behavior was usually empty (or vice-versa). One effect of the Diverging Series or Converging Series was to open up a new class of behavior in both impressions, so that Ss in Group E gave some introvert responses and Ss in Group I gave some extravert responses. But only under the introvert anchor was the "real Jim" usually changed from one class of behavior to another. Moreover, for Group I, instances of introvert behavior that had originally been regarded as characterizing Jim, and as deriving their impetus from some force inside the "real Jim," were now seen to be peripheral to the "real Jim" and to be the result of forces outside of him.

In other words, in the transition from the impression just after the anchor to the impression just after the Diverging Series or Converging Series, Ss of Group E added the introvert class of behavior to the universe of Jim's behavior, but regarded the behavior in this class as rather peripheral to Jim's true self. However, Ss in Group I not only added the extravert class of behavior to the universe of Jim's behavior but in so doing transformed their impression of the real Jim. Thus, it may be said that in Group E the new information was relegated to a peripheral place in S's impression of Jim, whereas in Group I the new information brought about a restructuring of the impression so that it was transformed.

It could be said that, due to learning the norms and standards of their society, Ss had developed a certain conceptualization of personality. When they were given clear information, they reported an impression that was true to the nature of the information; but, as the information became complex and inconsistent, Ss fell back upon their socially derived conception of what a person is or should be. Ss in Group E were set by the anchor for an impression that was in line with their social conception of a person. The anchor may have helped to give them security and to make them sure of their impression so that they could hold on to it—the extravert conception of Jim—in the face of dis-

crepant information. But Ss in Group I did not have their social conception of what a person is reinforced by the anchor. The anchor they received pointed in a different direction than did their expectations about the social conception of a person. Although, in line with the information, they initially reported Jim as introvert, they were not as sure of their impression as were the Ss of Group E. (This is shown by comparisons of their ratings of surety.) When Jim behaved extravertively in the series of discrepant communications, the Ss had some information that was related to their conception of what a normal person should be. Some Ss in Group I interpreted such information as indications that Jim was behaving more like he should behave or that he was becoming more normal or more adjusted. To them, Jim was showing signs of behaving in line with their social conception of a person. When the I anchor was readministered, it clearly contradicted the conception of Jim as extravertive. It unstructured their conception of Jim as a normal person, etc. (It will be recalled that most Ss in Group I said that the readministered anchor was the communication that they found most troublesome.) It is of interest that Ss in Group I gave predominantly introvertive responses to the readministered anchor, as they had to the initial anchor, despite the intervening series and despite their conception of the "real Jim" as extravertive. An explanation of these findings is suggested by Sherif's theorizing (6, 7) concerning the functioning of social norms. When Ss were initially presented with clear-cut evidence, they gave judgments or impressions in terms of the evidence. But as the evidence became inconsistent, Ss became confused and their impression became unstructured and they relied more on their social norms for their impression. It is in poorly structured situations that individuals are prone to fall back upon their social norms and not face the particular evidence.

E. SUMMARY

We investigated a number of conjectures suggested by previous work on personality impressions based on conflicting descriptions of a person's behavior. The same communications were presented in two different orders (to different Ss). In one order, the information in successive communications became more inconsistent, with increasing disparity between the components of a communication (Diverging Series). In the reverse order, the information became more consistent with less disparity between components (Converging Series). The Diverging or Converging Series was preceded in one group by a clear-cut description of extravert behavior (Group E); in another group, by a clear-cut description of introvert behavior (Group I); and in a third group, by behavior neutral to extravert or introvert characteristics (Group N). Our ex-

pectations were as follows: (a) that introvert responses would decrease (or at least not increase, i.e., would decrease monotonically) from Group I to N to E; (b) that Group E would show more stability and less variability in responses and that Ss of Group E would be surer of their responses than would the Ss of the other groups; (c) that introvert responses would be fostered more by the Diverging Series than by the Converging Series; and (d) that anchorage effects would be greater for the Converging Series than for the Diverging Series.

Results shown by the college Ss were in line with these expectations. How Ss reacted to a particular communication and how they reconciled inconsistencies seemed to be functions of the following: the specific communication, the order of presentation of information in the series, the initial anchor, and certain social conceptions of personality.

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ATTITUDES TOWARD THE INTEROFFICE MEMO AS A COMMUNICATION DEVICE*

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A. INTRODUCTION

Communication problems plague modern business operations. Leavitt (2), Bavelas (1), and many other authors' comments reinforce the importance of this problem for nearly every executive. The present study is exploratory in nature. The authors were interested in what communication problems exist in a typical large company. Obviously, only a small aspect of communication problems can be covered in this study and in this article. The authors selected the area of written communication: in particular, the problem of the interoffice memorandum (IOM). Although the formal standard operating procedure (SOP) communications might have been used as a basis for this study, SOP tends to indicate the ideal and not to express the everyday operations and interpretations of company procedures. Most of the real business operation of the company is reflected in the semiformal interoffice memorandum.

B. PROCEDURE AND METHOD

The organization studied, XYZ, is a large corporate structure with diversified operations primarily in airplane and space operations. The particular division in which the study took place was a plant of 15,000 men, with a heavy concentration of highly-trained professionals and other highly-skilled employees. To the extent that the plant under study was heavily engaged in government contract work of a secret nature and to the extent that it tended to have highly-trained scientific personnel in managerial positions, it may differ from the typical company; but the communality of functions of managerial activity in any company of this size probably makes this difference small.

This study covers a selected portion of the original research undertaken at the XYZ Company. For clarity's sake, only those design aspects that are germane to the present report will be discussed.

The sample used in this study consisted of the three top levels of manage-

* Received in the Editorial Office, Provincetown, Massachusetts, on September 4, 1963. Copyright, 1965, by The Journal Press.

ment. A questionnaire regarding interoffice memoranda was sent to every person in the population. The questionnaire not only asked specific information and opinion but also provided open-end questions that permitted the respondents to state their attitudes. Over 90 per cent of the respondents expressed their attitudes in their own words so that bias introduced by the questions could be checked. Anonymously, replies were sent directly to the authors in a prestamped, preaddressed envelope.

Any research is, of course, no better than the sample upon which the findings are based. Of the total population queried ($N = 407$), 164 (or 42.7 per cent) replied. Although this is a high rate of return for a mail survey, the authors were concerned with the possible nonrepresentativeness of the sample. The Management Development Department (MD) provided the authors with the number of managers at each level in the total population, and the questionnaire was coded so that the authors could determine the level of management of each respondent. The questionnaire asked each respondent to state his length of service at the XYZ Company. The Management Development Department drew a random sample of 100 managers at the three levels and estimated the average length of service for each level of management.

The two questions the authors asked were as follows:

Are the different levels of management represented in the sample of respondent; i.e., are the proportions of respondents in the three levels of management similar to the proportion of the three levels of management in the total population?

Are the lengths of service of the three upper levels of management for the respondents similar to the length of service for the total population?

TABLE 1
COMPARISON OF LEVELS OF MANAGEMENT IN TOTAL AND SAMPLE POPULATIONS

Management level	Per cent of total	
	Total population ($N = 407$)	Sample population ($N = 174$)
Top	11.5	10.9
Middle	40.3	40.8
Lower	48.2	48.3
Total	100.0	100.0

TABLE 2
AVERAGE LENGTH OF SERVICE IN RANDOM AND SAMPLE POPULATIONS

Management level	Mean service (in years)	
	Random sample	Respondents
Top	10.8	10.8
Middle	8.1	8.6
Lower	8.8	9.0

Tables 1 and 2 indicate that the sample is similar to the total population in terms of the indices available for comparison.

C. FINDINGS

Primary emphasis in this report was placed on the respondents' attitudes to interoffice memoranda. Each of the following questions was asked: How many IOMs do you get in a week? What percentage of IOMs require action? What percentage of the IOMs can be cut without impairing your work output? Many IOMs are ignored. Why is this so? Write any reactions you have to XYZ Company's communications, including IOMs. Tabulation of the answers to each of these question is found in Tables 3 to 7.

TABLE 3
HOW MANY IOMs DO YOU GET A WEEK?

Management level	Mean	Comment
Top	38.5	Two executives reported over 75.
Middle	38.7	Seven executives reported over 75.
Lower	28.6	Four executives reported over 75.

The mere mass of IOMs may or may not be indicative of anything. A more important concern, of course, is the impact of the IOMs. The first aspect of this was approached by asking "What percentage of IOMs require action?"

TABLE 4
WHAT PERCENTAGE OF IOMs REQUIRE ACTION?

Management level	Mean
Top	14.3
Middle	11.6
Lower	27.2

As might be expected, and as Table 4 shows, the lower echelon gets the greatest per cent of action IOMs. However, by reversing the data, even for the lowest-echelon sample, over 70 per cent are *not concerned with the action to be taken*. For middle management, over 80 per cent are procedural and informative in nature. If such a large proportion of IOMs are nonaction, one would expect considerable redundancy. This leads to the next question and to the answers given in Table 5.

Some of the reasons that one-sixth of the IOMs can be eliminated are suggested in the answers to the question as to why so many IOMs are ignored. See Table 6.

TABLE 5
WHAT PERCENTAGE OF THE IOMS CAN BE CUT
WITHOUT IMPAIRING YOUR WORK OUTPUT?

Management level	Mean
Top	18.3
Middle	17.4
Lower	16.4

TABLE 6
MANY IOMS ARE IGNORED. WHY IS THIS SO?

Management level	Did not apply %	Reason		
		Did not understand action required %	Poorly written %	Other %
Top	20.0	5.0	20.0	55.0
Middle	46.6	9.4	8.0	36.1
Lower	52.4	19.3	13.4	14.7

It should be noted that many IOMs are properly ignored because they do not apply to the recipient. The large per cent reported by respondents in middle and lower groups suggests that the distribution of information is not carefully monitored.

Perhaps the most significant figures are in Column 2 of Table 6. The members of the lower echelon, from whom the most action is required, report that most often they do not understand what to do. Top and middle management, who initiate much of the information, do not understand the action required when they receive IOMs from other divisions or superiors.

Table 6 indicates one other serious problem: namely, that many IOMs are poorly written and consequently ignored.

In order that the reader may get a clearer feeling of what the data mean in terms of the respondents' attitudes toward IOMs, several samples of direct quotations are given in Table 7.

In order to present a more succinct picture of the general attitude of the sample of respondents toward IOMs, a seven-point scale was devised, and all the written replies were coded into one of the categories indicated in Table 8.

It is immediately noticeable that the scale is apparently slightly biased on the negative side as the data do not distribute themselves normally about the neutral point.

As a check on the reliability of the scaling of the responses, an assistant was trained in the system of rating, and he independently rated all responses.

TABLE 7
WRITE ANY REACTIONS YOU HAVE TO XYZ COMPANY'S COMMUNICATIONS,
INCLUDING IOMs

Subject number	Number IOMs per week	Quotation
<i>Top Management</i>		
046	50	"Complex, overly technical, fuzzy syntax, dull, wordy."
148	75	"Little thought given to what meaning the reader will understand. All talk, no listen."
<i>Middle Management</i>		
104	50	"Many IOMs are written as a protective device, for record purposes. In many instances, a phone call would be an effective substitute."
171	50	"A large percentage are written to impress. Distribution seems to take the form used for campaign circulars or, on the other hand, it is <i>too</i> limited."
<i>Lower Management</i>		
171	50	"Wide range of quality exists. Many are not thought out and consequently they are not clear in purpose. Too many are 'shotgun' distributed without regard for need."
091	40	"Many documents are poorly organized, are not directed to the proper people and do not clearly state their purposes."

TABLE 8
CODED CATEGORIES FOR RESPONDENTS

Code	Category
07	completely negative
06	very negative
05	fairly negative
04	negative
03	neutral or did not answer
02	fairly positive
01	positive

Agreement between the two independent raters was 90 per cent.

Figure 1 indicates the distribution of attitudes toward IOMs by level of management.

The graph confirms the general negative attitude toward IOMs found in all previous parts of the study. While all three levels are negative, top management is least critical of IOMs.

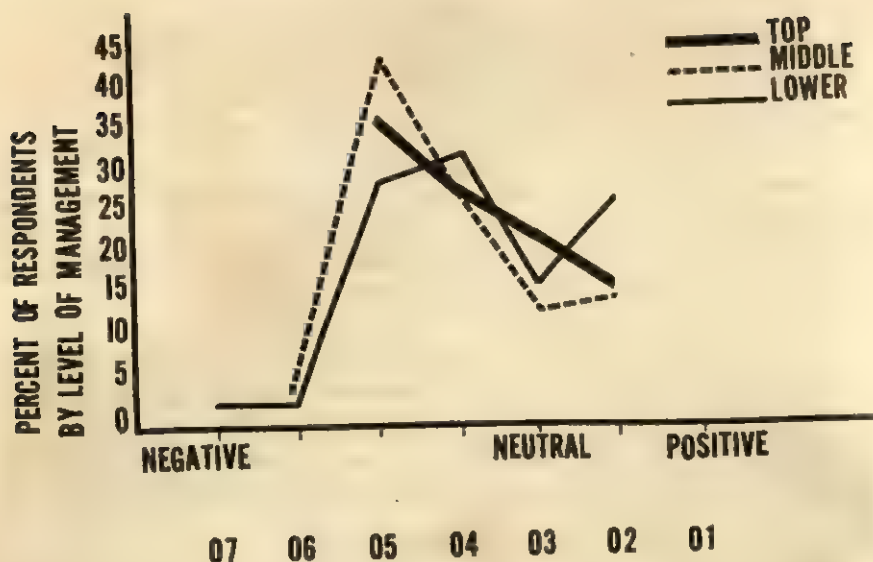


FIGURE 1
CODED RESPONSES TO OPEN-END QUESTION ON IOMs

D. DISCUSSION

How shall the massive indictment regarding IOMs be interpreted? On the basis of respondents' free replies (and supported by analysis of the data of the research in the project) the following interpretations seem reasonable:

1. All levels of management feel that there are too many IOMs.
2. All levels seem to feel that the distribution of IOMs is haphazard—sometimes being too wide and sometimes too narrow.
3. Top management expresses its hostility openly and rebels against the number of IOMs and their poor construction.
4. Middle management expresses its frustration by complaining about the number of IOMs, but is not as critical of the quality of writing as top and lower management.

5. Lower management, having to cope with a large number of action IOMs and having production schedules on its back, resents the large number of IOMs and the poorly written IOMs that must be translated into action.

A depth level analysis of the free responses seems to indicate (a) that the great majority of the respondents recognizes that IOMs are here to stay and (b) that verbalized aggression toward IOMs is an expression of frustration, annoyance, and anger at the current misuse of the IOM system.

E. IMPLICATIONS AND SUMMARY

It appears that the attitude toward XYZ Company communications (IOM) is negative. As noted, the authors hypothesized that the negative attitude is not toward IOMs per se but, rather, toward current usage and misuse of IOMs.

It is not unusual to find a certain amount of dissatisfaction within any company regarding its techniques of communications. Therefore, the findings at XYZ Company are not unexpected. The usefulness of this survey is that it provides feedback information regarding the weaknesses of the current usages of IOMs in the XYZ Company.

To the extent that the XYZ Company is like other companies, the results suggest that part of the problem of communication lies in the misuse of IOMs in that (a) they are poorly written, (b) they are improperly distributed, (c) clear information for action is not provided, and (d) management frequently uses IOMs for purposes other than communication of information.

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CRITICAL THINKING AND OPENMINDEDNESS IN PUPILS FROM PUBLIC AND CATHOLIC SECONDARY SCHOOLS*

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A. INTRODUCTION

This investigation compared seniors in public and Catholic secondary schools in critical thinking ability and openmindedness. This breakdown provided four groups consisting of parochial-school Catholics, public-school Catholics, Protestants, and Jews.

A review of the literature disclosed the lack of any comparable study. In fact, there were only a handful of empirical studies that directly or even indirectly compared the two school systems. Most notable of these were two studies by Hill (2, 3) in which Hill compared public- and parochial-school graduates in scholastic achievement in high school and college. Those differences that were found in the two studies tended to favor the public-school graduates. A comparison of the college graduates of the two systems was included in the work of Knapp and Goodrich (4) and Knapp and Greenbaum (5). In both studies, the graduates of the Catholic colleges achieved very poor showings. Liebermann (6), in comparing the amount of educational research generated by the two systems, found the Catholics making an insignificant contribution. Meng (7), in noting the educational background of eminent Catholic scholars, found most coming from secular schools.

When the growth and size of the Catholic school system is considered, the relative lack of comparative study is distressing. One of every seven elementary-school pupils, and one out of every eleven secondary-school pupils, in the United States attends a Catholic school.¹ Moreover, the Catholic school-growth rate was almost double that of the public schools during the period 1945 to 1959, the respective per cents being 102 and 52 (1).

In light of the relatively poor showing of Catholics in the majority of the studies cited earlier, critical thinking and openmindedness were considered as possible etiological factors. These hypotheses were tested.

* Received in the Editorial Office, Provincetown, Massachusetts, on September 6, 1963. Copyright, 1965, by The Journal Press.

¹ *The New York Times*, September 2, 1962, 10 E.

B. HYPOTHESES

1. Non-Catholic seniors in public secondary schools will have different scores from Catholic seniors in public secondary schools on tests of critical thinking and openmindedness.
2. Non-Catholic seniors in public secondary schools will have different scores from Catholic seniors in Catholic secondary schools on tests of critical thinking and openmindedness.
3. Catholic seniors in public secondary schools will have different scores from Catholic seniors in Catholic secondary schools on tests of critical thinking and openmindedness.

C. METHOD

1. *Subjects*

The subjects came from two public and two Catholic high schools in the New York Metropolitan area. The basis of selection was availability (that is, the principal agreed to allow his school to be used). In all cases, admission was accomplished through introduction by a third party known to both the principal involved and the investigator. Because of the nature of the study, purely random selection of the schools was not possible. The mere mention of religion generally sufficed to end any further discussion on testing the school's students. (This reluctance may account for the scarcity of comparative study.) Permission was denied in two of the four Catholic schools and in seven of the nine public schools solicited. In spite of this, there was no reason to believe that the schools used were not representative of their respective types.

The size of the groups was determined by availability. The Catholic high-school sample consisted of 268 Catholic students. The public high-school sample consisted of 118 Catholics, 90 Protestants, and 70 Jews. In each of the four groups, there were slightly more females than males. This was in keeping with what is generally found among high-school seniors.

The significant differences among the groups on mean intelligence score, coupled with the finding of significant correlations between intelligence and critical thinking (.52) and openmindedness (.16), made necessary the employment of analysis of covariance as the basic statistical procedure. Table 1 gives the means and standard deviations of the four groups in terms of scores on Otis Quick Scoring Mental Ability Tests.

It was not necessary to use another commonly used covariate, socioeconomic status, because of the lack of a significant correlation between this measure and the two instruments of measurement. Moreover, among the groups them-

TABLE 1
INTELLIGENCE TEST RESULTS

Group	N	Mean	SD
Catholics (Catholic high school)	268	115.2	9.6
Catholics (public high school)	118	105.0	10.4
Protestants	90	110.0	12.5
Jews	70	113.6	9.7

selves, only the Jews differed significantly from the other groups on this variable.

2. Instruments of Measurement

a. *The Watson-Glaser Critical Thinking Appraisal*. Form A (9) was used as a measure of critical thinking ability. Those scoring high on the test are considered better critical thinkers than those scoring low on the test. A reliability coefficient of .84 is reported in the manual for a group comparable to the population under investigation. In the manual, correlation coefficients with various intelligence tests are reported as clustering around .45.

b. *The Dogmatism Scale*. Form E, as described by Rokeach in the *Open and Closed Mind* (8), was used as the measure of openmindedness. Its primary purpose is described as measuring "individual differences in openness or closedness of belief systems" (8, p. 71). The scale also serves as a measure of "general authoritarianism and general intolerance" (8, p. 72). The reliability coefficients for the form used in this investigation range from .68 to .93. "These reliabilities are considered to be quite satisfactory especially when we remember that the *Dogmatism Scale* contains quite a strange collection of items that cover a lot of territory and appear on the surface to be unrelated to each other" (8, p. 90). A low score on the test indicates openmindedness; a high score, closedmindedness.

D. RESULTS

Table 2 gives the results for the test of critical thinking ability. Two means are reported for each group: one, the obtained mean; the other, the adjusted mean that resulted from the use of analysis of covariance.

The first hypothesis predicting differences between public-school Catholics and non-Catholics in critical thinking ability was supported at the .01 level with regard to Protestants and at the .05 level with regard to Jews.

The second hypothesis predicting differences between parochial-school Catholics and non-Catholics in critical thinking ability was supported at the .01 level with regard to the Protestants, but was *not* supported with regard to the Jews, although the differences were of considerable magnitude.

TABLE 2
OBTAINED AND ADJUSTED MEAN SCORES ON THE WATSON-GLASER
CRITICAL THINKING APPRAISAL*

Group	N	Mean	
		Obtained	Adjusted
Catholics (Catholic high school)	268	62.6	61.1
Catholics (public high school)	118	57.2	60.2
Protestants	90	64.3	65.1
Jews	70	64.2	63.5

* Significant difference at the .05 level = 3.0. Significant difference at the .01 level = 4.0.

The third hypothesis predicting differences in critical thinking ability between the two Catholic groups was not supported.

Table 3 gives the results with regard to the open-closed dimension. It should be kept in mind that a low score indicates openmindedness; a high score, closedmindedness.

TABLE 3
OBTAINED AND ADJUSTED MEAN SCORES ON TEST OF OPEN-CLOSED MINDEDNESS*

Group	N	Mean	
		Obtained	Adjusted
Catholics (Catholic high school)	268	182.5	183.2
Catholics (public high school)	118	170.9	169.5
Protestants	90	161.0	160.6
Jews	70	161.8	162.2

* Significant difference at the .05 level = 8.7. Significant difference at the .01 level = 11.4.

The first hypothesis predicting differences between public-school Catholics and non-Catholics in degree of openmindedness was supported at the .05 level with regard to the Protestants, but was not supported with regard to the Jews, although the differences approached significance.

The second hypothesis predicting differences between parochial-school Catholics and non-Catholics was supported at the .01 level for both Protestants and Jews.

The third hypothesis predicting differences between the two Catholic groups was supported at the .01 level.

An attempt was made to discover the effects of other variable factors that might be contributing to the results. Two major possibilities were considered. One was the type of school attended by the parents of the students. The other was the type of elementary school attended by the students.

The subjects had been asked to indicate where each of their parents had obtained their elementary, secondary, or college education. The possible re-

sponses were public, Catholic, both public and Catholic, and other for each of the three levels. Only the parochial-school Catholics had sufficient numbers in at least two categories for meaningful comparisons. Furthermore, only the all-Catholic or all-public categories were equivalent in amount of education to allow for meaningful comparison. Table 4 gives the results for parochial students grouped according to whether mother attended public or Catholic schools. Table 5 gives the results for parochial students grouped on basis of both parents having attended either public or Catholic schools. None of the differences in Tables 4 and 5 are significant.

TABLE 4
MEANS AND STANDARD DEVIATIONS OF SENIORS WHO HAD OBTAINED
ALL THEIR EDUCATION IN PAROCHIAL SCHOOLS AND
TYPE OF SCHOOL ATTENDED BY MOTHER

School attended by mother	N	Intelligence		Critical thinking		Dogmatism	
		Mean	SD	Mean	SD	Mean	SD
Public schools only	96	114.2	9.7	60.8	9.6	180.4	22.5
Parochial schools only	67	114.6	8.7	62.4	8.3	183.6	22.1
Difference		.4		1.6		3.2	
t		.3		1.1		.9	

TABLE 5
MEANS AND STANDARD DEVIATIONS OF SENIORS WHO HAD OBTAINED
ALL THEIR EDUCATION IN PAROCHIAL SCHOOLS AND
TYPE OF SCHOOL PARENTS ATTENDED

School attended by parents	N	Intelligence		Critical thinking		Dogmatism	
		Mean	SD	Mean	SD	Mean	SD
Both attended public schools only	61	113.9	10.4	61.7	10.5	180.9	22.1
Both attended parochial schools only	28	115.6	7.6	63.8	6.7	180.0	21.1
Difference		1.7		2.1		.9	
t		.8		1.0		.4	

The Catholic students in both types of schools were grouped according to the type of elementary school attended. Again, only the all-Catholic or all public categories provided for meaningful comparison. Tables 6 and 7 give the results for these groupings. None of the differences in either table was found to be significant.

TABLE 6
MEANS AND STANDARD DEVIATIONS OF CATHOLIC HIGH SCHOOL SENIORS
AND TYPE OF ELEMENTARY SCHOOL ATTENDED

Type of school attended	N	Intelligence Mean	Intelligence SD	Critical thinking Mean	Critical thinking SD	Dogmatism Mean	Dogmatism SD
Public elementary	19	111.8	11.1	63.5	6.9	185.5	28.9
Parochial elementary	212	115.5	9.4	62.6	9.1	182.2	21.8
Difference		3.7		.9		3.3	
t		1.6		.4		.6	

TABLE 7
MEANS AND STANDARD DEVIATIONS OF CATHOLIC SENIORS IN PUBLIC HIGH SCHOOLS
AND TYPE OF SCHOOL ATTENDED

Type of school attended	N	Intelligence Mean	Intelligence SD	Critical thinking Mean	Critical thinking SD	Dogmatism Mean	Dogmatism SD
Public elementary	75	106.2	10.2	58.1	9.5	169.8	23.4
Parochial elementary	23	104.1	11.2	58.5	9.5	172.9	29.6
Difference		2.1		.4		3.1	
t		.8		.2		.5	

E. DISCUSSION

The most significant single finding in this investigation is the great divergence of the parochial high-school seniors from the public high-school seniors in mean score on the test of openmindedness. The results seem to indicate strongly that parochial secondary schools produce more than their proportionate share of closedminded students. It must of course be granted that public-school Catholics tend to be relatively closedminded when compared to non-Catholics in the public school. However, the difference between the two Catholic groups is greater than are the differences between the public-school Catholics, and the Protestants, and Jews.

The attempt to find other factors that produced the closedmindedness of the Catholic students was not fruitful. The results tentatively seem to suggest that education in a parochial secondary school is the single most salient factor in developing closedmindedness.

Of course, there is the possibility that the parochial secondary school attracts more closedminded students. The need for a longitudinal study covering the high-school period is obvious if causal factors are to be determined. Such a

study would also show perhaps that the crucial years for the development of critical thinking ability and openmindedness occur during the adolescent period and not during the early childhood period.

The results indicating the relative closedmindedness of Catholics may provide some explanation for the relatively poor showing of Catholics in the areas of scholarship, research, and the attainment of intellectual eminence. The poor showing of otherwise intelligent Catholics in such areas might at least be partially explained by the tendency toward closedmindedness. Latent abilities may never be actualized because of the short-circuiting effects of closedmindedness.

The results with regard to critical thinking ability are not as clear-cut as are those pertaining to the open-closed dimension. The two Catholic groups did not differ significantly, nor did the parochial school Catholics differ significantly from the Jews. There are many possible explanations as to why the differences were not as had been hypothesized. The explanation favored by the author is that the Catholic difficulties are in the attitudinal area more than in the knowledge of methods of critical thinking and in skill in applying those methods. Therefore, only that part of a test of critical thinking ability that measures attitudes of willingness to weigh evidence, etc., will significantly contribute to differences. The Dogmatism scale, on the other hand, is more purely a measure of attitudes. The higher correlation obtained between critical thinking score and *IQ* score (as compared to Dogmatism and *IQ* score) lends support to the thesis that critical thinking is more closely related to the cognitive area, as it is usually defined.

The results of this investigation raise many important problems and questions as to the effects of education in public and Catholic schools. The need for cooperative research between the two systems seems pressing. The need to study Catholics, Protestants, and Jews in their own religious schools as well as in the public schools seems obvious from the results found with regard to Catholics in this investigation. It would seem unwise to generalize to all members of a religious group on the basis of studies done on adherents found only in the secular school.

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THEORIES OF PANIC BEHAVIOR: A REVIEW*

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A. INTRODUCTION

In stress situations, one aspect of social behavior that has been subjected to little experimental investigation is panic behavior. In the literature relating to the nonadaptive behavior of panic, there are but two experimental investigations of this phenomenon (6, 13). By far the great majority of the literature consists of post hoc impressionistic reflections that contain little substantive material amenable to systematic, analytic interpretation (14, 15).

The problem of panic behavior has always been of importance in the military and in natural and man-made disasters among the civilian populace. Now, however, with the greatest disaster threat of modern times—the possibility of a nuclear holocaust—the phenomenon assumes a more intense criticality. Since World War II there has been speculation, in both popular and professional literature, as to what the last days on earth would be like if a nuclear war were unleashed. The essence of many of the articles for popular consumption is that there will be panic behavior on a nationwide level and that this panic behavior could cause more chaos and social disorganization than the physical effects of the bombs themselves (17, 18). On the other hand, much of the disaster literature makes the counterclaim that little panic behavior will occur; and that, only in isolated, local situations (9, 10, 16).

Of necessity both positions are based on little more than speculation for, with the exception of the experiences in Hiroshima and Nagasaki, there is little basis for sound prediction as to what might be the aftermath of such a holocaust. Because of this unresolved controversy and its practical implications, the problem of panic behavior merits serious, systematic, experimental investigation. Our understanding and prediction of the behavior of groups cannot be considered complete without the ability to predict those conditions which are likely to cause the group to function no longer or even to exist qua group.

As a prelude to a research program designed to investigate the role of certain variables in facilitating or minimizing panic behavior, the writer has re-

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viewed the theoretical formulations that attempt to explain this phenomenon of social disorganization.

As suggested by Brown (1), and Schultz (15), any discussion of panic behavior is incomplete unless the structure of the group (i.e., organized *vs.* unorganized) is taken into account. Observations of and generalizations about one such group will not necessarily apply to the other. An example will serve to emphasize this point. The perception of danger seems to be common to those theories concerned with unorganized groups. In an organized group, however, such as a military unit in combat, this condition would not apply as danger is ever-present, yet panic is relatively rare. McDougall (12) noted that organized groups are characterized by (a) continuity of existence, (b) awareness of membership, (c) interaction with other organizations, (d) a body of tradition, and (e) differentiation of functions. Unorganized groups, then, are characterized by the absence of the above. An example of an organized group is a military body. An example of an unorganized group is a street crowd. Thus, in considering the theories of panic, this distinction must be noted.

B. THE THEORETICAL POSITIONS

1. *Unorganized Groups*

McDougall considered panic to be the crudest and simplest example of collective mental life. He commented that:

. . . the sudden appearance of imminent danger may instantaneously convert any concourse of people into a crowd and produce the characteristic and terrible phenomena of a panic. In each man, the instinct of fear is intensely excited; he experiences that horrible emotion in full force and is irresistibly impelled to save himself by flight. The terrible driving power of this impulse, excited to its highest pitch under the favoring conditions, suppresses all other impulses and tendencies, all habits of self-restraint, of courtesy and consideration for others . . . (12, p. 24).

Thus panic was seen by McDougall to be the collective intensification of instinctive excitement, with its concomitant emotion of fear and its impulse to flight. This collective intensification is induced by emotional contagion or "primitive sympathy."

Hence, in a crowd situation, each individual perceives the expression (or expressions) of fear of his neighbors, which perception increases his own fear. For McDougall, this explained why a large group of people may engage in panic behavior in response to a threat that may be perceptible only to a small portion of that group.

LaPiere's analysis of panic behavior (11) viewed the reaction as a collective solution to the sudden adjustment problem created by a crisis. He noted the two origins of panic as (a) the occurrence of a crisis or danger situation and (b) the lack of regimental behavior or leadership for the crisis.

LaPiere suggested that the immediate antecedents of panic behavior are individual and not collective. When a crisis situation has occurred, social interaction is interrupted and the situation is momentarily (at least) reduced to an aggregate of shocked individuals, and all action is suspended. Following this, the members of the situation behave as isolated individuals, each trying to find an appropriate response to the crisis.

No aggregate of reacting individuals can, however, long refrain from interaction with one another, if for no other reason than that they are likely to come into physical contact with one another. Inevitably, therefore, the period during which members of a group react as individuals is brief and is followed by some form of collective behavior. Unless regimental leadership operates, the collective behavior will be panic in type. The immediate origin of panic behavior is, thus, seen to lie in the individual heterogeneous reactions of a group to crisis (11, p. 441).

In his analysis of *The Invasion from Mars* broadcast, Cantril (2) hypothesized that the panic reaction to the broadcast was due to the perceived threat to the well-being, and safety of the individual. As to what constitutes a personal threat to an individual, Cantril suggested that:

When an individual believes that a situation threatens him he means that it threatens not only his physical self but all of those things and people which he somehow regards as a part of him. This Ego of an individual is essentially composed of the many social and personal values he has accepted. He feels threatened if his investments are threatened, he feels insulted if his children or parents are insulted, he feels elated if his alma mater wins the sectional football cup. This particular pattern of values that have been introjected by an individual will give him, then, a particular Ego (2, p. 299).

A panic will occur according to Cantril, then, when a highly cherished value is threatened and when no reduction or elimination of the threat seems apparent. The behavior during panic is characteristically undirected and is functionally useless in terms of attempting to cope with the crisis.

Thus, Cantril posited that:

. . . the extreme behavior evoked by the broadcast was due to the enormous felt ego-involvement the situation created and to the complete inability of the individual to alleviate or control the consequences of the invasion. The coming of the Martians did not present a situation where

the individual could preserve one value if he sacrificed another. It was not a matter of saving one's country by giving one's life, of helping to usher in a new religion by self-denial, of risking the thief's bullet to save the family silver. In this situation the individual stood to lose *all* his values at once. Nothing could be done to save *any* of them. Panic was inescapable (2, p. 300).

That this terror reaction was not the response of all the radio audience was accounted for in terms of suggestibility. Cantril hypothesized the existence of background or antecedent factors that render some individuals more susceptible to panic terror than others. He defined these background factors in terms of a lack of critical ability and of certain personality characteristics that would render some people especially susceptible to belief and fright.

Mintz (13) hypothesized that intense emotion is not essential to panic behavior. Rather, he argued, panic is a function of the perceived reward structure of the situation. He believed that nonadaptive behavior arises from a breakdown in cooperation that then causes the panic flight to appear to be adaptive behavior, from the point of view of the individual. He noted that:

Cooperative behavior is required for the common good but has very different consequences for the individual depending on the behavior of others. Thus, at a theatre fire, if everyone leaves in an orderly manner, everybody is safe, and an individual waiting for his turn is not sacrificing his interests. But, if the cooperative pattern of behavior is disturbed, the usual advice, "Keep your head, don't push, wait for your turn and you will be safe," ceases to be valid. If the exits are blocked, the person following this advice is likely to be burned to death. In other words, if everybody cooperates, there is no conflict between the needs of the individual and those of the group. However, the situation changes completely as soon as a minority of people cease to cooperate. A conflict between the needs of the group and the selfish needs of the individual then arises. An individual who recognizes this state of things and who wants to benefit the group must sacrifice his own selfish needs (13, p. 575).

Mintz offered a series of experiments which partially verified his hypothesis.

The significant point of departure between Mintz's theory and those discussed earlier is that Mintz minimized the role of mutual emotional facilitation that played such a prominent role in the other theories. Also, Mintz did not assume the existence of alterations of individual personalities due to membership in a crowd. On the contrary, he suggested that people behave purely as individuals in accord with their own selfish needs.

Foreman's theory of panic (5) is not clearly defined as pertaining to either organized or unorganized groups. As will be discussed later, however, one of his conditions that relates to the direct cause of panic is the absence of pre-

pared or conventionalized behavior. As such behavior is characteristic of organized (e.g., military) groups, Foreman's theory will be treated in this section.

Foreman suggested the operation of certain background or preceding conditions that, while not capable of causing panic, would render individuals more highly prone to panic behavior. These background conditions were grouped into four types: (a) those, such as fatigue, that weaken individuals organically; (b) those, such as lack of information concerning attacks in war, that create acute emotional tensions or anxiety; (c) those, such as stranger status, that prevent or weaken group identifications; and (d) those, such as awareness of weapons like napalm or gas, that create chronic social unrest.

According to Foreman, the direct cause of panic is the linkage of a shock stimulus and certain reaction phases to that stimulus. The stimulus must be of sufficient intensity to compound terror responses and must be such that no conventionalized responses are adequate to cope with it. Such a stimulus will interrupt antecedent behavior and suspend all action.

Shock is the initial reaction phase to this stimulus. The disruptive influence of this shock will be greater when the following conditions are met: (a) inhibition of normal sensory functioning, (b) the ratio of individuals suffering immediate personal or property damage to the total population is greatest, (c) the response to institutionalized commands is reluctant or slow, (d) physical protection is not adequate, and (e) where affected individuals are in motion, particularly retreat, at the moment of the crisis stimulus.

The shock phase is quickly followed by confusion which is characterized by random and inconsistent attempts at interpretation of and adjustment to the crisis.

Foreman's third phase is terror.

Initial terror responses include shouts, screams, and excited physical movements. This is not a lull phase; it is a period of din. These indecisive acts of initial terror, if not immediately controlled by an overwhelming order-producing stimulus, compound into bedlam. Such reactions may be significant at first as releases for overwhelming tension; quickly, however, they serve as reinforcing stimuli for the terror of others and may be reflected back, circularwise, to reinforce the frenzy of the original actor. Linked in these ways, the terror of interacting individuals is heightened (5, p. 530).

2. *Organized Groups*

Freud (7) believed that panic was best studied in military groups. An army was considered by Freud to be an artificial group in that external force was required to keep it together and to maintain its structure. Freud hypoth-

esized that in such a group each individual becomes bound by libidinal ties both to the leader and to the other members of the group. A panic then arises when this group becomes disintegrated to the point where each individual becomes concerned with his own welfare and has no consideration for the other group members. "The mutual ties have ceased to exist and a gigantic and senseless dread (*angst*) is set free" (7, p. 46).

Thus, to Freud, panic results from a relaxation in the libidinal structure of the group and not from danger or a threat, per se, for this same army previously may have faced even greater danger with considerable success.

Along similar lines, Schultz (15) offered an explanation of panic in organized military groups, but he used concepts that were more operational in nature (e.g., group cohesiveness). He noted that Cartwright and Zander (3) defined a cohesive group as one in which all the members work together for a common goal and in which everyone is ready to assume responsibility for the group tasks.

The willingness to endure pain or frustration for the group is yet another indication of cohesiveness. Finally, we may conceive of a cohesive group as one in which its members will defend against external criticism or attack (3, p. 74).

Adding the notions (*a*) that the group may become a haven for protection from a threatening environment and thus become a means to satisfy the need for security (8) and (*b*) that there are external restraints that serve to keep the group intact, Schultz suggested that a small army unit seemed to fit reasonably the definition of a cohesive group.

It was further assumed that the small cohesive army unit could be considered a primary group in that it is characterized by an intimate, face-to-face relationship, a warm emotional tone, and involves close physical proximity (4). In a military environment, the individual soon finds himself isolated from his civilian primary group. Schultz suggested that, as a result, the individual soldier comes to depend more and more upon his military primary group for satisfaction of basic needs of affection, security, status, etc. Serving to reinforce the satisfactions and the demands and expectations of this group are the officially prescribed rules and external authority that serve to hold the individual's aggressiveness in its proper context.

Accordingly, Schultz hypothesized that the social disorganization of panic in organized collectivities is dependent to a large measure on the capacity of the immediate primary group to avoid social disintegration. When this primary group is able to satisfy adequately the individual's physiological and social-

psychological needs, the element of self-concern is minimized. Conversely, when the primary group life is disrupted, an intensity of preoccupation with physical survival develops, and the attraction to remain a member of the group is minimized.

What disrupts the primary group life and disintegrates the group cohesion? In attempting to answer this, Schultz suggested the operation of one set of factors that seem capable of predisposing individuals in the group to panic flight and another set of factors that may operate to precipitate the panic flight.

The predispositional variables are not causal factors of panic, but render individuals and the group more susceptible to panic. "These predispositional variables would seem to operate to weaken men both physically and psychologically and so cause them to be more easily influenced by rumor and suggestion and render them less capable of rationally interpreting ambiguous situations" (15). The precipitating variables are capable of causing panic flight either in combination with the predispositional variables or independently, if of sufficient intensity.

C. DISCUSSION

In attempting an evaluation of the foregoing theories of panic behavior, we must again emphasize the distinction between organized and unorganized collectivities. It would be pointless for us to compare a theory designed to explain panic in organized groups with one that is restricted to unorganized groups.

All the theories dealing with panic in unorganized groups utilize some combination of the following four variables: (a) perception of a crisis situation, (b) antecedent or background factors, (c) mutual emotional facilitation or behavioral contagion, and (d) breakdown in mutual cooperation. Possession of certain background factors seems to render some individuals more prone or susceptible to panic flight once a crisis situation has been perceived and defined as such. Panic behavior then spreads from perhaps only a minority of the group to the remainder of those individuals in physical proximity. Finally, the panic behavior seems to lead to the breakdown in mutual consideration with its concomitant "every-man-for-himself" attitude.

The one variable invoked by all five theorists dealing with unorganized groups is perception of a crisis situation. Evidence suggests, however, that the existence of a crisis of itself, does not always lead to panic flight. Undoubtedly, the atomic bombing of Hiroshima was perceived as a crisis by the inhabitants, and yet Janis (9) found only one clearly established instance of the non-rational escape reaction of panic. That perception of a crisis is a necessary

condition for panic to develop cannot be denied, but the literature on panic implies that other variables must be operative in concert with perception of a crisis for panic to occur.

The variable of mutual emotional facilitation was invoked by McDougall (12), LaPiere (11), and Foreman (5). Cantril (2) did not discuss the possible role of this factor, while Mintz (13) did not believe it at all essential to the genesis and spread of panic behavior. The three theories that did utilize this factor noted that it follows the perception and definition of a crisis *qua* crisis. The theories are in agreement that emotional facilitation operates to compound the terror and to spread the terror among all those present in the crowd through some form of behavioral contagion. Its suggested role, then, would seem to be that of facilitating and possibly precipitating panic flight. The individual perceives the overt fear and terror manifestations of his fellows. This reinforces and perhaps gives expression to his own fear. Thus, the mutual emotional facilitation functions as a terror-reinforcing agent. Anecdotal evidence of panic situations (e.g., theatre fires) suggests that if all remain calm, these expressions of calmness will spread through the crowd and panic will be averted. What causes a few individuals in a crowd to manifest terror behavior overtly and in so doing cause the spread of this behavior throughout the entire group?

To Cantril and Foreman, the answer lies in the background or antecedent factors of the individual. The individual is more suggestible (Cantril) or weakened physically or emotionally (Foreman), so that he is less capable of rationally interpreting the stimulus situation. As discussed earlier, once a few individuals behave in extreme fashion the remainder may quickly follow suit, through behavioral contagion. Thus, research on the individual threshold for mob behavior may be in order to attempt to identify characteristics of the "panic-prone" individual (1).

A final variable, breakdown in mutual consideration, is discussed by McDougall, LaPiere, Mintz, and Foreman. Cantril does not discuss this point. Analysis of the theories implies that panic is not a result of breakdown in mutual consideration, but rather its cause. Mintz, however, suggests that panic arises only when a few individuals have ceased to cooperate, thus causing the perception of an unstable reward structure for all involved.

It would be gratuitous at this stage of our understanding of panic to suggest that any one of these four variables is decidedly more influential than the others. The only conclusion that might be drawn tentatively is that panic proceeds more readily when all of these variables operate in interaction with

one another. It is noted that Foreman is the only theorist to invoke all four of these factors.

Mintz's theory of the perceived reward structure of the situation is (to date) the only theory of panic to have received some experimental verification. However, one of his conclusions would appear to be open to question; i.e., that emotion and behavioral contagion are not essential to panic. Examination of his experimental design reveals that the variable of emotional facilitation was introduced in his control condition only (those groups in which there were no rewards and fines and which were told that the experiment was a study of cooperation). In these groups, this variable did not bring about the nonadaptive behavior of panic. In the experimental groups (those performing the task under the system of rewards and fines), this variable was not used. It was in these "reward-and-fine" groups that the panic behavior invariably occurred, thus lending support to Mintz's major theory. If the emotional-facilitation variable had been introduced in these groups, might not the intensity of the panic behavior have been even greater? According to McDougall, LaPiere, and Foreman, it would have been. The question remains for experimental investigation to answer.

With respect to panic in organized groups, both Freud (7) and Schultz (15) minimize the role of crisis or danger as being of paramount importance as causal factors. Both theories stress the breakdown in mutual consideration: Freud, in terms of the severing of libidinal ties between individuals; Schultz, in terms of the shattering of the bonds of group cohesiveness in the military "primary group."

But what causes this breakdown in group structure or mutual consideration? Freud did not address himself to this problem. Schultz, on the basis of historical anecdotal "data," considered the breakdown to result from a number of background or predispositional variables or precipitating variables.

The value of theorizing lies in its heuristic implications for future research. Mintz's simulated-panic situation seems to offer a systematic and well-controlled experimental methodology for much-needed further research in this area. The fact that Mintz was able to produce the same nonrational, nonadaptive behavior as has been noted in real-life panic situations (using what was certainly a minimal fear stimulus) is of great significance for panic research.

Some of the theories discussed are more amenable to experimental investigation than others. For instance, the variables noted by Mintz and Schultz are capable of operational definition and of experimental manipulation.

Theories such as those discussed should serve to stimulate and direct our

thinking and research efforts in this all-important and oft-neglected area of social behavior. If they have accomplished this end, they have served their purpose.

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ACHIEVEMENT MOTIVATION, AFFILIATION MOTIVATION, AND TASK DIFFICULTY AS DETERMINANTS OF SOCIAL CONFORMITY*¹

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A. INTRODUCTION

While early theoretical analyses of social conformity implied that conformity represents a unitary process having a unitary motivational basis, recent research has led to a reformulation of this conceptualization, placing it within the context of a more functional psychology concerned with means-end relationships and with the purposive aspects of behavior. See Walker and Heyns (13). Conformity is now generally regarded as a mode of behavior in the service of a variety of motivational systems. One of the most fruitful differentiations of motivational bases underlying conformity behavior is that proposed by Deutsch and Gerard (3) in distinguishing *normative* and *informational* forms of social influence. Parallel discussions of similar differentiations occur in Asch's distinction between yielding at the "action level" and at the "judgment level" (1), in Thibaut and Strickland's discussion of "group" and "task" set (12), and in McDavid's "message-oriented" and "source-oriented" distinction (6). Less directly but in the same vein Riopelle (10) and McDavid (7, 8) have contrasted observational learning from blind imitation. These various conceptual schemes focus in common on a differentiation of one process (in which conformity or behavior matching is an end in itself) from a second process (in which behavior-matching is instrumental—but otherwise incidental—to attaining some other criterion of achievement). The normative process describes behavior that involves conforming for the sake of conforming. The informational process describes behavior in which conforming acts occur not because congruence or agreement with the source of influence is the criterion of goal attainment in its own right, but because conformity is a means of obtaining information, achieving cognitive structure or understanding, or gaining closure or solution in a problem-solving situation:

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a set of goals centered in the task itself rather than in other people physically or psychologically present.

While such differentiations of modes of conformity are widely accepted, relatively little empirical exploration of motivational factors operating within each process has been executed. While both achievement motivation and affiliation motivation have been shown to generate pressures to conform (13), the specific conditions under which each is likely to operate are largely unexplored. Furthermore, individual differences in motivational predispositions have not been widely investigated. Most research dealing with personality factors in conformity (e.g., Crutchfield, 1955) has operated under a unitary conceptualization of conforming behavior, rather than under the type of framework described.

The present investigation was undertaken to explore directly the interaction between a situational condition and personality or motivational factors. The situational or task-related variable of task difficulty or ambiguity and its relationships to achievement needs and affiliation needs within the individual were investigated as determinants of conforming behavior in a laboratory perceptual-judgment task. In line with the differentiation of normative and informational processes of social influence, it was expected that at low levels of task difficulty (requiring unambiguously determined judgment), affiliation motivation should generate pressures to conform; whereas achievement motivation should generate pressures toward independence. On the other hand, at high levels of task difficulty (or ambiguity), achievement motivation as well as affiliation motivation should generate pressures toward conformity.

B. METHOD

1. *Subjects*

One hundred Ss from introductory psychology classes at the University of Miami were given the Edwards Personal Preference Schedule (4). From this group, on the basis of scores on the achievement and affiliation scales, 20 males and 20 females were selected to comprise the experimental sample. On the achievement scale, scores of 14 and above defined the high-achievement group, and scores of 13 and below defined the low-achievement group. On the affiliation scale, Ss with scores of 14 and above were classified as having high-affiliation needs, and Ss with scores of 13 and below were classified as having low-affiliation needs. These cutting points do not necessarily coincide with a median split of the distributions, but were determined empirically in order to achieve four contrasted groups: (a) high-achievement, high-affiliation Ss; (b) high-achievement, low-affiliation Ss; (c) low-achievement, high-affili-

ation *Ss*; and (*d*) low-achievement, low-affiliation *Ss*. Each group included five males and five females. *Ss* ranged in age from 18 to 34. Most were sophomore students.

2. Procedure

Observations of conforming behavior were made within an artificial laboratory situation similar to that used by Crutchfield (2). The simplified Crutchfield apparatus houses four subjects at a time in separate stalls and provides a two-choice answer-reporting system utilizing a switch-and-light communication net enabling *E* to introduce false information into the system.

In the presence of a contrived influencing majority of three unanimous peers, a series of perceptual-judgment tasks was presented to the individual. The first subseries consisted of judgments of auditory stimuli, and this was followed immediately by a second subseries consisting of judgments of visual stimuli. In both modalities, *S* was required to judge one of two sets of stimuli as greater or less than the other. Within each task modality, three levels of difficulty were established on the basis of pretesting. An "easy" task was defined as one in which pretest *Ss* expressed accurate judgments in differentiating the stimulus pairs at least 90 per cent of the time and indicated at least 90 per cent certainty on a zero to 100 per cent rating scale. A "difficult" task was defined as one in which pretest *Ss* expressed accurate judgments in differentiating the stimulus pairs at least 90 per cent of the time, but indicated less than 70 per cent certainty on the confidence-rating scale. An "insoluble" task was one in which neither judgment available to *S* was correct, since the two members of the stimulus pair were equivalent.

Subjects were scheduled to come to the experimental laboratory in groups of four at appointed times. Whenever possible, personal friendships among members of a foursome were avoided, and *Ss* were assigned to a foursome by random selection from the available population. In all cases, members of a foursome were of the same sex. Even when *Ss* were personally acquainted, procedures for assigning identification letters to each *S* allowed no basis for *S* to assume that a given member of the foursome had been assigned a given letter. Upon arrival at the laboratory, *Ss* were conducted to the experimental room and asked to seat themselves in the four stalls of the Crutchfield apparatus. The instructions, delivered by tape recording, informed *S* that *E* was interested in perceptual judgments in groups and described the apparatus and the fact that each *S* was able not only to report his own judgment but also to be informed of the judgments expressed by other members of the foursome. *S* was told to open a sealed envelope in which he would find a code letter (*A*,

B, C, or D) by which to identify himself. Each envelope contained a card with the letter D on it, leading *S* to believe that the other three members of the foursome had been assigned A, B, and C. The instructions continued with a brief statement that performance was to be evaluated in terms of both "accuracy in reporting as well as cooperation with others using the apparatus." The auditory-judgment task was then described, and an example trial was demonstrated without asking *Ss* to report their judgments. At this point, *E* interrupted the tape recording and asked if there were any questions concerning the instructions. When *E* was assured that all *Ss* understood the requirements of the experimental task, the recording was started again, and the experimental series began.

a. Auditory tasks. The first subseries in the experiment task included 18 trials requiring judgment of the first or second member of a pair of recorded metronome clicks as greater in number than the other. This task was adapted from a similar auditory-judgment task previously employed in investigations of conforming behavior (6, 9). Of the 18 trials, 12 were "critical" trials (occurring irregularly within the series) in which the contrived report of the judgments of three peers displayed unanimous selection of the *wrong* member of the pair. The remaining six trials were filler or "reinforcement" trials on which reported judgments of peers were accurate. The 12 critical trials included four trials at each of three difficulty levels: easy tasks (three, four, or five clicks in each set within a pair sounded at the rate of 100 clicks per minute, with a discrepancy of one click between the two sets comprising a pair); difficult tasks (13, 14, or 15 clicks in each set sounded at the rate of 200 clicks per minute, with a discrepancy of one click between the two sets comprising a pair); and insoluble tasks (18, 19, or 20 clicks sounded at the rate of 200 clicks per minute, with both members of the pair comprised of the same number of clicks).

b. Visual tasks. At the end of the 18 trials comprising the auditory-judgment series, the tape recording continued by instructing *Ss* that the remainder of the judgment task would deal with visual perception. *S* was informed that a series of slides would be projected, each slide containing a pair of white discs against a black background, and he was told that his task was to judge whether the disc on the right or the disc on the left was the larger of the pair. A series of 10 trials followed, with six critical trials and four filler trials, in irregular order. The six critical trials included two at each of three levels of difficulty defined empirically as described earlier: easy tasks (radii of the two discs were in the ratio of 8:5), difficult tasks (radii of the two discs were in the ratio of 16:15), and insoluble tasks (radii of the two discs were equal).

Thus, the total experimental sequence consisted of 28 trials, including six critical trials at each of three levels of difficulty. Data for both visual- and auditory-judgement tasks were pooled (since the empirical definition of task-difficulty levels was identical for both), in order to increase the number of individual measures on which conforming scores were based without undue repetition of identical or highly similar tasks. Conforming scores for each *S* were derived by totaling the frequency of his conformity to contrived group pressure on critical trials within each level of task difficulty. Two *S*s who made more than two errors in judging filler or reinforced trials were eliminated from the sample and were replaced.

C. RESULTS AND DISCUSSION

To insure homogeneity of variance, a transformation of the form $\log(X + 10)$ was performed on the raw conformity scores. These data were then submitted to a mixed design analysis of variance in which EPPS achievement (high versus low), EPPS affiliation (high versus low), and sex of *S* operated as between-subjects factors, and task difficulty (easy, difficult, impossible) operated as a within-subjects factor. The results of this analysis are summarized in Table 1.

The fact that the simple effect of task difficulty is significant ($p < .001$) corroborates the frequent observation that susceptibility to group pressures

TABLE 1
ANALYSIS OF VARIANCE OF TRANSFORMED CONFORMITY SCORES

Source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between subjects	39			
Affiliation	1	.016064	4.264	.05
Achievement	1	.004821	1.280	
Sex	1	.002636	1.	
Affiliation \times Achievement	1	.030198	8.016	.01
Affiliation \times Sex	1	.000880	1.	
Achievement \times Sex	1	.012412	3.295	
Affiliation \times Achievement \times Sex	1	.005394	1.432	
Error	32	.003767		
Within subjects	80			
Task difficulty (T)	2	.190813	137.970	.001
T \times Affiliation	2	.000027	1.	
T \times Achievement	2	.005966	4.314	.05
T \times Sex	2	.002148	1.553	
T \times Affiliation \times Achievement	2	.001258	1.	
T \times Affiliation \times Sex	2	.000702	1.	
T \times Achievement \times Sex	2	.000363	1.	
T \times Achievement \times Affiliation \times Sex	2	.000031	1.	
Error	64	.001383		
Total	119			

on individual judgments is greater in situations in which objective determinants of the judgment are indefinite or subjectively ambiguous than in situations in which evidence for objective determinants of the judgment is readily and amply available. Frequency of conforming at each of the three levels of task difficulty differs significantly from that at the other two levels. At the .001 level of confidence, conformity occurs more frequently on soluble judgmental tasks in which subjective confidence is low (so-called "difficult tasks") than on soluble judgmental tasks in which subjective confidence is high (so-called "easy tasks"). In turn, conformity occurs more frequently on maximally ambiguous ("insoluble") judgmental tasks than on either category of the soluble tasks ($p < .001$). These findings replicate a repeatedly observed phenomenon in studies of conforming behavior and validate the preliminary assumption that the three empirically defined levels of task difficulty represent different sets of situational conditions.

The simple effect of affiliation motivation is significant ($p < .05$), although the simple effect of achievement motivation is not. Over all difficulty levels combined, subjects in the high-affiliation groups yield to group pressure significantly more often than subjects in the low-affiliation groups.

While the simple effect of achievement motivation is not statistically significant, the interaction between this variable and task difficulty is significant ($p < .05$). The high-achievement and the low-achievement groups do not differ in frequency of yielding on difficult or insoluble tasks, but on easy tasks the high-achievement group yields significantly less frequently than the low-achievement group ($t = 2.67, p < .05$). For the low-achievement group, the difference between frequency of conforming on easy and difficult tasks is not statistically significant; however, this difference is significant for the high-achievement group ($t = 4.19; p < .001$). Both the high-achievement and the low-achievement groups conformed significantly more frequently on insoluble tasks than on either category of soluble tasks, but the differences (between conforming on insoluble and either category of soluble task) are significantly greater for the high-achievement group than for the low-achievement group ($p < .05$).

Finally, the interaction between achievement motivation and affiliation motivation is significant ($p < .01$). It appears that these two motivational systems interact in such manner that one may operate to suppress the effect of the other upon conforming behavior. For the high-achievement groups, the level of affiliation motivation is not significantly related to frequency of yielding to group pressure; however, for the low-achievement group, subjects in the high-affiliation group conform more frequently than subjects in the low-

affiliation group ($t = 3.06, p < .01$). However, within each level of affiliation motivation, the effect is rather different with respect to the operation of achievement motivation. For the low-affiliation groups, the level of achievement motivation is not significantly related to frequency of conformity to the group; but within the high-affiliation groups, subjects displaying a high level of achievement motivation conform significantly less frequently than subjects displaying a low level of achievement motivation ($t = 2.28, p < .05$).

The conceptual distinction between normative and informational modes of social influence proves useful in interpreting these findings. The interaction between affiliation motivation and achievement motivation as determinants of conforming behavior becomes meaningful when construed in these terms. Individuals whose achievement needs are relatively strong appear to react to social-influence situations with relatively little regard for the satisfaction of affiliation needs. In a sense, such individuals seem to operate within a predispositional "task set" (12), focusing their attention upon satisfactory achievement in the task at hand and presumably utilizing the social influence that occurs in situations of this sort for its informational value only. While the effects of achievement motivation upon conforming behavior within levels of affiliation motivation are less readily interpretable, attention to the nature of the EPPS measure of affiliation needs provides some clue to understanding these effects. For individuals whose affiliation needs are relatively strong, the utilization they make of social influence appears dependent upon the strength of their achievement needs. For those whose affiliation needs are weak, conformity in social-influence situations appears to occur less frequently and non-differentially with respect to achievement needs. It appears that these individuals may be relatively indifferent to social influence, either in terms of its informational value or in terms of its normative pressures toward congruence or agreement. Items within the EPPS-affiliation scale are not restricted to assessment of agreement-seeking motivation (4) and, in fact, discussions of the conceptualization of the affiliation motive and gregariousness (5, 11) include both agreement seeking and information seeking as potential undercurrents in the operation of such motivational systems. In summary, it appears that individuals in the low-achievement, low-affiliation group in this study are merely relatively indifferent to the occurrence of pressures.

The interactions between task difficulty and the achievement-motivation variable particularly support the value of a conceptual distinction between normative and informational forms of social influence. Under request to express a simple unambiguous perceptual judgment for which there is ample available objective evidence, individuals displaying high levels of achievement

motivation are less susceptible to group pressures toward an obviously erroneous judgment than are individuals who display low levels of achievement motivation. The general tendency toward more frequent conformity in ambiguous situations among all subjects tends to obscure possible observation of greater tendencies to conform among high-achievement subjects, as compared to low-achievement subjects under such conditions. Thus, while the evidence is incomplete, these data support the conclusion that motivational predispositions in the area of achievement needs tend to generate an information-seeking type of conforming behavior in response situational circumstances. In contrast, motivational predispositions in the area of affiliation needs tend to generate an agreement-seeking mode of conformity to social influence that is unrelated to task characteristics.

The fact that neither the sex factor nor any of its interactions with the other factors explored was found to be a significant determinant of conforming behavior offers some support to current theoretical analyses of conforming behavior. The often-observed sex differences in conforming behavior diminish when motivational predispositions are controlled. It is likely that the fact that females are commonly observed to yield to group pressures more frequently than do males may be due largely to underlying differences between the sexes in predispositional motivational systems.

It is important to recognize the fact that the assessment of motivational predispositions that underlies this investigation is a matter of expedience rather than of careful specific assessment of "information-seeking" or "agreement-seeking" motivational systems. The EPPS was utilized for this assessment because it is an easily administered and widely used motivational-assessment device that includes two scales the titles of which (characterization and content) identify them as closely related to the two motivational systems under investigation here. To the extent that these scales may be poor measures of information-seeking and agreement-seeking needs, the interpretation of these findings as corroborative of a conceptual distinction between normative and informational forms of social influence is open to challenge.

D. SUMMARY

Extending from the differentiation of normative and informational processes of social influence (3), an investigation of interactions between two motivational factors (achievement needs and affiliation needs, as measured by the Edwards Personal Preference Schedule), and one situational factor (task difficulty or ambiguity) was executed. Using a modified Crutchfield apparatus, male and female undergraduates were subjected to contrived group

pressures toward erroneous perceptual judgments. An analysis of variance of frequencies of conforming behavior revealed (a) that conformity occurs more frequently on maximally ambiguous perceptual tasks than on relatively unambiguous ones and more frequently on unambiguous tasks that are characterized by lack of subjective confidence in accuracy of judgment; (b) that predispositional achievement needs are related to characterization of the task situation as easy, difficult, or impossible whereas predispositional affiliation needs are unrelated to task characterization; (c) that high levels of achievement motivation operate to suppress differentiation of response to social influence as a function of differences in affiliation motivation, while low levels of affiliation motivation may generate relative indifference to social influences regardless of differences in achievement motivation; and (d) that sex differences in frequency of conformity to group pressures are reduced when predispositional motivational factors are controlled. These findings are interpreted as corroborative of a conceptual distinction between an informational form of social influence (in which conformity is instrumental to the attainment of personal achievement, success, or accuracy in judgment) and a contrasted normative form of social influence (in which conformity is related to agreement-seeking, acceptance, or affiliation). In the former, the fact of behavior matching is incidental to goal attainment; while in the latter, the fact of behavior matching is itself the criterion of goal attainment.

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CHANGE IN RELIGIOUS ATTITUDES DURING FOUR YEARS OF COLLEGE*¹

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A. INTRODUCTION

Most colleges state in their catalogs that they seek to influence the attitudes and values of their students. It would seem apparent that four years of new information presented in formal classwork and four years of association in face-to-face peer groups would result in changes in the attitudes and values of students. In his review of research on value changes in college, Jacobs (3) found evidence of value change in students at certain colleges and of no change in students at other colleges. Whether or not change of value occurred seemed to depend upon the "atmosphere" pervading the particular college.

A concern of the denominational college is the change in the religious values of its students. Do religious values change? In what direction do they change? And what forces in college life promote these changes?

The forces that may influence students to change their attitudes during four years of college may be categorized as academic classwork, personality, and peer groups. There is presented to students in class a large amount of new information that may lead to change. However, this information is presented to students who have differing personality predispositions for accepting the information. Influencing both the acceptance of the new information and the impact of the information on the attitudes are the peer groups of which the students are members.

The change in the religious values of a particular student may be conceived of in two ways: (a) the value may expand because of the incorporation of attitudes that previously were part of other values or it may become smaller because it loses an attitude area to another value; or (b) the change may be a movement from one extreme of the value toward the other extreme, with no expansion or shrinkage in the value occurring.

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B. INSTRUMENTS

To assess the changes in values during four years of college, 37 Likert-type religious items were selected from a previous research by Allen and Hites (2) and from a battery of religious items used by the author at this college. These items were selected to represent as many different areas of religious life as possible. The *F* Scale by Adorno *et al.* (1) was used as a measure of personality. Biographical questions elicited information concerning the students' membership in fraternities or sororities, whether they lived on the campus or not, their participation in campus religious organizations, their academic major, and their vocational plans.

C. SUBJECTS

All incoming freshmen in the fall of 1956 were given the religious-attitude questionnaire. The same questionnaire plus the *F* Scale and biographical questions were given at the end of their senior year to those of the original sample who remained in this college. Sixty students were tested and retested. Five students who were tested as freshmen and who completed work at this college were not available for retesting.

All subjects were from the southeastern section of the United States. Most of them graduated from high schools in the larger cities of Alabama.

D. METHODS

The definition of value used in this research is that suggested by Newcomb. "The term 'value' is often used by social psychologists to refer to whatever it is that serves as a common goal in inclusive attitudes" (5, p. 130). In this research, inclusive attitudes are defined in terms of attitude-item loadings on the same factor. To measure value stability, it would be necessary to show that the relationship between items remains the same from freshman to senior years. If, due to the movement of items, the attitude structure changes, value change has occurred.

To determine if the values of students in this college remained the same, contracted, or expanded, Thurstone, centroid factor analyses were computed for the freshman and senior interitem correlation matrices separately. Rotation to simple structure was performed on each of the two sets of factors, by means of Zimmerman's graphic method (9). Thus, there were two sets of rotated factors for the same group: one set as freshmen and one as seniors. These two sets were compared to determine if the same items appeared on the same factor for freshman and for senior years.

To determine what changes occurred within a value or factor, items were

selected which loaded .30 or more on the same factors for both testings. For the freshman testing, standard scores for each of the selected items were computed and summed across items to arrive at a score for each factor. As suggested by Trites and Sells (7), a weight of one for each item was used rather than separate weights based on factor loadings. On each factor, change scores were computed by subtracting senior scores from freshman scores. A *t* test was used to determine if there were significant differences between the freshman and senior years on a factor.

Chi-square tests were used to determine if there were significant differences in freshman scores, senior scores, or change scores between such categories as men and women, campus residents and nonresidents, and fraternity and non-fraternity status.

The Kruskal-Wallis one-criterion analysis of variance by ranks (4) was used to determine if there was a significant difference between several peer groups.

Pearson correlations were computed to show relationships between continuous variables.

E. RESULTS

1. *The Factor Analysis and Rotation*

Of the 13 factors extracted for each matrix, three were found on which four or more items loaded significantly for both freshman and senior testings and on which the factor structure was similar for all items. All items and the factor loadings on the three factors on which similar factor structure was found are presented in Table 1.

a. *Factor 1. The function of religion and how revealed.* The items on this factor describe a continuum from the acceptance of to the rejection of the following functions of religion: (a) to insure the survival of civilization, (b) to give meaning to life, and (c) to explain the basis of the laws of nature and the mysteries of life and death. On both freshman and senior years, 10 items had loadings sufficiently high to be used for scoring this factor.

b. *Factor 2. Literal-nonliteral acceptance of the Bible.* The items on this factor describe a continuum from a literal interpretation of the Bible and an acceptance of the unchanging nature of religion through a nonliteral acceptance of the Bible and admission of the change in religion to a rejection of religion as necessary to civilization. On both freshman and senior testings, 10 items had loadings sufficiently high to be used for scoring. However, one item that had a loading on Factor 1 and was used for scoring Factor 1 was not scored on Factor 2.

TABLE 1
RELIGIOUS-ATTITUDES ITEMS AND FACTOR LOADINGS ON THREE COMMON FACTORS^a

Item	Factor I			Factor II			Factor III		
	Fr*	Sr*	Fr	Fr	Sr	Fr	Fr	Sr	Sr
Foreign missions in the church should be supported.	77	43	-03	14	-12	-65			
Religion is necessary to the continuance of civilization.	73	51	03	00	18	-16			
A belief in God is necessary to give meaning to life.	70	56	-06	-16	-09	-38			
There are many events which cannot be explained except on the basis of the divine or supernatural.	46	63	-09	08	-25	-39			
Since there are laws of nature, there must be a Giver of law.	40	38	25	02	-42	-35			
The unexplained mysteries concerning the origin of life make the belief in the existence of God a necessity.	39	53	18	07	19	04			
The existence of God is proven because he revealed Himself directly to the prophets described in the Old Testament.	35	72	-25	-03	02	16			
The Bible only has meaning when one believes it to be a complete record of the revelation of the word of God.	30	61	-48	-32	30	32			
In considering marriage a boy (or girl) should determine first whether their girl (or boy) friend accepts Christ as saviour.	30	68	-02	-02	-30	-23			
Religion and emotions are inseparable.	10	24	-02	01	-33	-10			
It is correct to say that religions have arisen in places and at times when man was struggling for survival.	22	24	-02	42	01	16			
The Bible is nothing more than a history of the Jewish people and the founding of the Christian church.	-19	-31	25	38	16	27			
One of the chief reasons for going to church is to gain a peace of mind in this troubled world.	-05	-07	29	27	05	41			
Many soldiers have found that carrying a Bible protects them from danger.	13	34	23	13	13	38			
The existence of God is proven by the fact that He has revealed Himself repeatedly to men on earth.	09	67	-22	05	-40	-22			
As a result of our prayers, God makes changes in the physical world.	06	33	-07	-06	-24	05			
The revelation of God ceased with the writing of the New Testament.	-12	-28	05	-07	21	51			
The average Christian today is not as devoted to Christ as Christians in our Grandfather's day.	02	03	03	-15	28	21			

TABLE 1 (continued)

Item	Factor					
	I		II		III	
	Fr*	Sr*	Fr	Sr	Fr	Sr
Prayer is convincing one's self that one should do something.	00	-44	43	15	23	34
The doctrine of immortality is a fiction of the human mind.	-38	-56	-08	-05	57	37
The usefulness of religion depends upon its ability to change as conditions change.	-10	11	39	50	10	12
Some secular literature may be as inspiring as the Bible.	-04	-28	51	54	07	03
Religion needs to become more social in its emphasis.	02	02	37	65	03	07
Morals would continue even if religion were to cease.	-07	-45	48	48	-05	-06
The idea of the soul is an attempt on the part of man to overcome the fear of death.	02	-23	52	47	29	21
Salvation comes from doing good.	05	-03	63	37	16	39
Religious experience is largely emotional in nature.	11	01	65	31	09	36
To admit there are errors in the Bible leads to rejecting the whole Bible.	00	03	-32	-35	69	24
Religion is the attempt of man to explain the beginnings of the physical world and man's relation to it.	02	-04	34	32	47	59
The soul is a product of thinking, having no better standing than a myth.	-32	-22	55	06	34	44
Once one has been saved, he is saved for all time.	10	10	-29	-30	42	41
The teachings of the Old Testament should be considered just as important as the teachings of the New Testament.	27	17	-16	-14	11	36
The idea of creation of the world out of nothing is incomprehensible.	-05	-22	35	22	10	02
There are certain sins that God cannot forgive.	-11	-13	-02	-44	-23	27
The fact that a man is a church member can tell us nothing about his moral character.	-09	07	-01	25	-21	09
It would be best to make all in America Christian before we spend money on foreign missions.	-21	-32	42	09	07	56
The Old Testament can only be understood in the light of the teachings of Christ.	10	32	-33	-08	-05	02

* Item loadings on other factors available on request.

* Fr. stands for freshman and Sr. for senior.

c. *Factor 3. Immortality and man's relation to the physical world.* Man, a physical being, must recognize the physical world and its laws. However, the concept of immortality stands against the purely physical nature of man. The items with loadings on this factor measure this concept of immortality and the physical world. On both freshman and senior years, five items had loadings sufficiently high to be used in scoring this factor.

2. *Item Changes Between Factors*

Because of the small number of subjects, it is difficult to assess the changes of items from one factor to another. In spite of the fact that all items had a test-retest reliability significant at or beyond the one per cent level, it is possible that the changes in the magnitude of the correlations and the loadings on the factors were due to chance variations and not to changes of attitudes. Because of the few factors that remained the same from freshman to senior year, we may say tentatively that there is some evidence that not all factors (values) of freshmen are stable. Some changes in values do occur.

3. *Change in Factor Scores From Freshman To Senior Years*

As mentioned, scores on factors were obtained by summing the standard scores of the items that had loadings on each of the factors. Thus, each individual has three sets of scores (freshman scores, senior scores, and change scores) on each of the three factors.

Freshman scores for Factors 1 and 3 are correlated .48 ($p < .01$). Factor 2 is relatively independent of each of the other factors, as shown by the correlation of .22 with Factor 1 and the correlation of .07 with Factor 3. For all three correlations, $N = 60$.

To determine the amount and direction of change, the senior-factor score was subtracted from the freshman-factor score. A t test was computed to determine if the change was significant (see Table 2).

The change in attitude on Factor 1 represents a movement from acceptance of to less acceptance of the following functions of religion: to insure the survival of civilization, to give meaning to life, and to explain the basis of the laws of nature and the mysteries of life. This result may indicate less certainty as to what religion is or a more naturalistic interpretation of phenomena usually ascribed to God.

On Factor 2, the change in attitude represents a movement from a more literal to a less literal interpretation of religion and from the belief that religion is changeless to a recognition of a constant change in religion.

On Factor 3, the change (though slight) is in the direction of a more naturalistic interpretation of the world. Though the change was significant, it represented a shift from strong belief in immortality to less belief in immortality rather than a shift from strong acceptance of to a rejection of immortality.

On the first two factors, it must be noted that nearly everyone changed in the same direction. This marked change in almost the entire population may indicate a prevailing atmosphere or climate, on this campus, that encourages these changes.

TABLE 2
DIFFERENCES BETWEEN FRESHMAN SCORES AND SENIOR SCORES FOR THREE FACTORS
($N = 60$)

Factor	M_D	σ_D	t	p
1	4.59	.84	5.46	.001
2	4.70	.56	8.32	.001
3	1.00	.44	2.24	.05

4. Change and Personality

To what extent was change on one factor related to change on the other factors? Change scores on Factor 1 correlated positively and significantly (at the .05 level) with change scores on Factors 2 and 3: $r = .28$ and $.54$, respectively, for an N of 60. To a limited extent, the forces for change on Factor 1 acted concomitantly on Factor 2 and 3. However, change on Factor 2 was not related significantly to change on Factor 3: $r = .10$. Thus there is some evidence of a generalized flexibility-rigidity trait of personality, but it is not generalized throughout all factors.

Do those who make low scores as freshmen change less or more than those who make high scores? Correlations between freshman scores and change scores [corrected for the negative correlation of error variance, by a formula suggested by Zieve (8)] were computed. The correlations were .00, $-.30$, and $.04$ for the three factors respectively. For an N of 60, the correlation for Factor II and change is significant at the .05 level. Those who were more "conservative" as freshmen changed more than those who were less conservative. To state it differently, those who marked the more extreme conservative choices as freshmen were more likely to change than those who marked the less extreme choices.

The California F Scale by Adorno *et al.* (1) was administered to all sub-

jects at the time of senior testing. The *F* scores of two subjects are omitted because of lack of complete responses. The *N* is 58 throughout this discussion of the *F* Scale.

Rokeach (6) has demonstrated that the *F* Scale is partially a measure of rigidity. Those who change less on the three factors may be said to be more rigid (or less flexible) than those who change more. We may hypothesize that high scores on the *F* Scale, indicating rigidity, are related to little change and vice versa. This hypothesis is confirmed. The change scores for all three factors correlate negatively and significantly (one-tailed test) with *F* Scale scores. The correlations are $-.59$ ($p < .005$), $-.28$ ($p < .025$), and $-.38$ ($p < .005$) for Factors 1, 2, and 3 respectively.

The *F* Scale, administered at the close of four years of college, correlates with change of attitudes during the four years. And it does this in spite of the fact that the *F* Scale does not correlate significantly with the freshman scores for any of the three factors. It may be concluded that amount of change during the four years of college may be accounted for partially by personality factors.

The amount of change on each of the three factors as related to sex role may be included in this section on personality and change. The chi squares for the two-fold tables were not significant for any of the three factors.

5. *Peer Groups and Change*

In a small college community, there are ample opportunities for students to discuss with one another fads, fancies, idiosyncrasies of professors, questions raised by class or course work, and extracurricular activities. This opportunity for intercommunication should facilitate the formation of peer-group norms. In this section, the differential change among peer groups on the three factors is discussed.

The findings are largely negative. The chi-square tests between the following groups on amount of change were *not* significant for any of the three factors: (a) those living on the campus versus those living at home, (b) women living on the campus versus women living at home, (c) fraternity-sorority members versus nonmembers, (d) fraternity members versus men nonmembers, and (e) sorority members versus women nonmembers.

The results are surprising since many administrators believe that living in the dormitories leads to more attitude change than not residing on the campus.

However, certain groups did show differential change. On Factor 2, men living in the dormitories changed more than did men living at home ($\chi^2 = 3.57$, $p = .10$, $df = 1$). The differences for the same group on Factors 1 and 3 were not significant.

On Factor 2 also, men living in the dormitories changed more than did women living in the dormitories ($\chi^2 = 4.14$, $p = .05$, $df = 1$). The differences for the same groups on Factors 1 and 3 were not significant.

Student religious groups sponsored by the various denominations should have considerable influence on the religious values of the students who participate in them. Chi-square tests were computed for the two-by-two tables for each factor. The results are presented in Table 3. Though none of these

TABLE 3
PARTICIPANTS AND NONPARTICIPANTS IN RELIGIOUS ORGANIZATIONS

Score	Factor	χ^2	p
Freshman	1	3.45	.10
Change	1	1.76	.20
Freshman	2	1.76	.20
Change	2	3.45	.10
Freshman	3	3.45	.10
Change	3	.22	.70

chi squares are significant at the five per cent level, it is interesting that all of the distributions are in the same direction. Nonparticipants made higher and less conservative freshman scores than did participants.

Though the participants in religious organizations differ from nonparticipants when they enter college, what changes occur in their attitudes during four years of college? As may be noted in Table 3, none of the chi squares are significant and the trends are mixed. Participants change as much or as little as nonparticipants.

By including all denominations in the participant and nonparticipant groups, a great amount of heterogeneity is introduced. To increase the homogeneity, only the largest denominational group on the campus (the Methodist) was considered. The results are presented in Table 4.

TABLE 4
PARTICIPANTS AND NONPARTICIPANTS IN RELIGIOUS ORGANIZATIONS: METHODISTS
($N = 39$, $df = 1$)

Score	Factor	χ^2	p
Freshman	1	4.41	.05
Change	1	.24	.70
Freshman	2	.62	.50
Change	2	4.41	.05
Freshman	3	3.32	.10
Change	3	.24	.70

Among Methodist students, nonparticipants had higher freshman scores than did participants on both Factors 1 and 3. Nonparticipants are less likely than participants to see religion as necessary (a) to the survival of civilization, (b) to give meaning to life, and (c) to explain the laws of nature and the mysteries of life. (Factor 1). Nonparticipants more than participants believe in the strictly physical nature of man (Factor 3).

On Factor 2, participants were more likely to change than nonparticipants. The change was from a literal interpretation of religion to a less literal interpretation of religion.

6. *Fraternities and Sororities as Peer Groups*

In this study, the only fairly homogeneous peer groups for which data were available were the fraternity and sorority groups. Because in these groups membership is restricted and intragroup communication is high, norms should develop which should distinguish one group from another. To determine if these groups differed from one another, the Kruskal-Wallis test (4) was used. The results of these computations for the five fraternities and sororities for which sufficient numbers of members were available are presented in Table 5.

TABLE 5
KRUSKAL-WALLIS TESTS BETWEEN FRATERNITIES AND SORORITIES

Score	Factor	χ^2*	p
Freshman	1	8.18	.10
Senior	1	7.65	.20
Change	1	4.35	.50
Freshman	2	4.00	.50
Senior	2	2.36	.70
Change	2	2.75	.70
Freshman	3	8.54	.10
Senior	3	12.09	.02
Change	3	1.10	.90
F Scale		3.10	.70

* $df = 4$.

On Factor 1, there was a tendency for the groups to differ. On Factor 3, the difference between the groups was marked at the senior year. On the basis of these analyses, one could say tentatively that those who remained after four years of college were alike in attitudes on two of the measured variables as freshmen and as seniors. Is the fact that members of a group were similar as freshmen due to the process of choosing new members during "rush week" or due to the withdrawal from college of those who were markedly dissimilar in attitude from their groups?

The members of these groups are influenced toward change by the information gained in various classes and the impact of the campus atmosphere. If there is a sharing of norms within a group about the content of this new information, one would expect members of the group to move in concert. That this is not substantiated is demonstrated by the lack of significant difference between the fraternity and sorority groups on change scores. Members of one of these groups do not move in concert with other members. In view of the fact that these groups became more homogeneous within groups on Factor 3 (i.e., group members became more alike), how can we account for the homogeneity of change between groups?

As may be noted in Table 5, the groups were alike on the personality variable measured by the F Scale.

7. Academic Courses and Change of Attitude

The differences on amount of change between those majoring in natural science, social science, and the humanities are not significant. Of course, in a liberal-arts college, all students must take some courses in all divisions and this may account for a lack of differential change.

Differences in academic preparation are also reflected in the vocation for which these students are preparing. The significance of the difference on amount of change between the groups intending to go into (a) teaching, (b) the ministry and Christian education, and (c) medicine and dentistry was computed. There were no significant differences between these three groups for any of the factor scores.

F. DISCUSSION

As was noted, three factors remained relatively the same from freshman to senior year. If values are defined as attitudes that fit structurally together, one might conclude that as far as these three values (factors) are concerned, values do not change. However, other factors were not as stable from freshman to senior year. Thus there is a possibility that there is a rearrangement of attitudes into new factors (values) during four years of college.

When differences between the freshman and the senior years on the three stable factors is examined, one sees that considerable change occurs from one extreme of the factor toward the other extreme. This is not a radical shift from strong "conservatism" to "liberalism," but a shift from strong agreement to not-so-strong agreement or uncertainty. What does this shift indicate? Are students confused as a result of four years of college? One may make a case for confusion and say that the college has failed in its mission of helping the stu-

dent develop an integrated philosophy of life. But it is possible to put a positive interpretation on the same facts and say that the movement away from strong agreement or strong disagreement indicates that seniors are less rigid in their values. During the four years of college and exposure to a great variety of ideas from classmate and classwork, students have become more tolerant of others. The relation of F Scale scores to change scores for all three factors also would indicate increased flexibility and tolerance.

Perhaps what is happening is an increased flexibility and tolerance within an existing structure of values. This should be a desired outcome for a liberal education. The flexibility and tolerance gained during college would be of aid in personality growth beyond the "halls of ivy."

Though nearly all individuals changed in the same direction, they did not all change the same amount. Differences in the amount of change may be accounted for by differences in personality and peer groups.

Personality differences as measured by the F Scale relate to differences in change. Since this scale was given only to seniors, there is no way of knowing, in this research, how much change occurred in authoritarian attitudes during the four years of college and how the F Scale given to seniors reflects authoritarian attitudes in the same persons as freshmen. One *cannot* predict that if the F Scale had been given to freshmen that those scoring high authoritarian would change less than those scoring nonauthoritarian.

As was noted, few of the differences between peer groups on the amount of change were significant. The groups were too heterogeneous. It may be that the selection of the individuals for these groups took little account of the value differences between individuals and that, in order to maintain any intergroup communication, conversation must proceed on topics that would introduce little strain in individuals. There would be little sharing of norms except on a superficial basis.

Though nearly everyone changed, and in the same direction, not everyone changed to the same degree. This differential change can be accounted for in part by differences in flexibility rigidity, as measured by the F Scale. Differences in the peer groups to which a student belonged accounted for little or none of the interstudent differences in change. Perhaps the primary groups within a college need to be identified and tested to determine if part of the difference in amount of change within values can be accounted for by membership in different primary peer groups.

G. SUMMARY

Values were defined in terms of attitude structure revealed by factor analysis. The same religious-attitude items were given to the same students as

freshmen and as seniors. Factors analyses of the interitem correlation matrices were computed. Three factors were found on which the item loadings were similar for both freshmen and senior testings. Items with significant loadings on both testings were selected and value scores for each factor were computed by summing standard scores. Change scores were found for the three factors by subtracting senior scores from freshman scores. There was a significant change on all three factors. Though nearly everyone changed, and in the same direction, individual differences in amount of change were found. Amount of change on each factor was related significantly to F Scale scores. There were few significant differences between peer groups on the amount of change.

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BEHAVIORAL FACTORS IN DISASTER SITUATIONS*

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A. INTRODUCTION

A few years ago the temperature of the cold war soared to such heights that retail sales of family bomb shelters went ahead of color TV sets for a few months. Even a few of our military friends working in the Pentagon had home shelters installed and equipped and began family indoctrinations. This crisis passed and perhaps further sober thought hastened the obsolescence of the family shelter. At present (September, 1963), with the nuclear-test treaty prominent in the news, the tension appears to have abated considerably, although the jittery layman may note that high, professional military commanders have expressed reservations and objections to the treaty.

This is the state of affairs in which civil-defense planning for nuclear disaster measures has been taking place. It is complicated by uncertainty, fluctuation of tension (with incidents produced by negotiation, unilateral action, and propaganda—by the principals as well as other parties), and by conflicting goals of maintaining a strong defensive posture, on one hand; while attempting to press conscientiously for arms control and disarmament, on the other. If our generals were not opposed to the test ban, perhaps we should doubt their strength of identification with their grave defense responsibilities. At the same time, each of the major military, political, economic, and diplomatic programs of the nation is but a part of a complex governmental machinery, and each must be viewed in relation to the others and to the operation of the whole.

The present paper attempts to analyze some of the problems of civil-defense planning for possible nuclear attack on the homeland of the United States in this realistic context. The focus is principally on postnuclear attack phenomena, but much emphasis is placed on the critical importance of pre-attack warning and preparation in conditioning the adequacy and extent of postattack performance. The approach is to extrapolate from a survey of the literature (12) on natural and man-made disasters to the new situations implied by nuclear weapons.

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In recent years, behavioral scientists have made extensive observations immediately following and subsequent to a large number of natural disasters (disease, tornadoes, hurricanes, fires, floods), man-made disasters (bombing, relocation and internment, explosions, fires), and others in which man and nature have cooperated, as when faulty preparation or carelessness have permitted preventable damage and destruction. Such studies lend support to the scientific assumption that cataclysmic events, though fortunately exceptional, nevertheless are determined by natural law and demonstrate predictable, causal relations that offer opportunities for human intervention to reduce loss of life and property. Unfortunately this type of research involves all of the difficulties, lack of control, dependence on *ex post facto* evidence and on subjective impressions of victims involved, and has not yet produced a fabric of theoretical formulation permitting rigorous hypothesis testing. Much of it has been descriptive and impressionistic. Nevertheless, some significant progress has been made and certain efforts have been impressive.

One of the principal and most obvious conclusions drawn from the disaster literature is that preparation is both possible and effective. The destructiveness of any disastrous event depends, of course, on the impact force. However, it depends almost as much on the state of readiness of the target personnel with respect to defensive construction (levees, shelters), special equipment (fire fighting, protective personal equipment), organization (for rescue, evacuation, medical care, welfare, police, traffic control, and communication), warning, and postimpact restoration of people and property for some degree of normal living. From the viewpoint of preparation, the special conditions that nuclear warfare imposes are short warning time of attack, expectation of more widespread destruction than ever before experienced (including radiation fallout at remote points), and the need for special equipment and information for survivors. For the purpose of this discussion, it is assumed that there will be survivors and limited aid from outside of the affected areas, and that post attack conditions will require functioning at a primitive level of existence for a substantial period for survivors.

B. WARNING AND PREPARATORY PROCESSES

The importance of warning and preparation lies largely in their conditioning influence on expectations when situations develop. Data from diverse sources, such as strategic bombing surveys and other studies in World War II (4, 6, 15), displaced persons and prisoners of war taken by the Communists during the Korean War (1, 10), surgical and cancer patients (7, 8), mothers of children with leukemia and other fatal diseases (5, 9, 14), and persons who

have experienced repeated flood, tornado, or hurricane disasters (2, 3, 11, 13) confirm the relation between warning and advance information of threatening events and the nature of response at the time of impact and after. Warning initiates processes that Janis (8) has called "the work of worry," involving fear-motivated problem solving and vicarious rehearsal of alternative solutions. While fear is normally experienced in some relation to the extent of danger, warning can reduce irrational fear to a moderate level when associated with information about danger and risks.

Janis (7, 8) related preimpact worry to postimpact reactions of surgical and cancer patients. In a brief and greatly oversimplified form, his conclusions were as follows: (a) high preimpact fear is followed by high postimpact anxiety, preoccupation with the threat, and alarm at the person's own psychophysiological reactions; (b) moderate preimpact fear is accompanied by the lowest level of postimpact disturbance and the best chance for constructive self-preparation at all levels of preimpact fear; (c) low preimpact fear in relation to the realistic dangers faced was followed by hostility and resentment against the medical staff and other authority figures who presumably withheld information; and (d) preimpact denial, as well as ignorance of the danger, was followed by postimpact neurotic collapse—in these cases lack of previous worry and rehearsal were apparently responsible for feelings of helplessness, disappointment, loss of confidence, resentment, and continued feelings of fear and vulnerability.

Knudson and his colleagues, working with mothers of children with fatal diseases, concluded not only that the earliness of warning, but also that accurate information and the experience of living in the hospital and participating in the care of their children produced for the mothers a growing understanding of the situation and acceptance of the outcomes, which came finally as release from suffering. In some cases in which diagnosis and therefore warning was deferred, the consequences were dramatically different. Participation in activities connected with disaster coping thus involves more active learning and shortens the warning time required for adjustment. It also facilitates worry and rehearsal in a context of more realistic information.

Whether or not warnings are transmitted through official channels, people take warning from situations as they perceive them. Perceptions may not only take account of false cues, but they are dependent on transitory and idiosyncratic personal and situational states, self-appraisal, previous inoculating and conditioning experience, and many other factors. Veridical appraisal of reality is important because the appropriateness of preparation depends on the nature of the danger. Surgery and illness involve one set of behaviors, while nuclear

disaster involves others. Preparation for nuclear disaster involves psychological as well as technical readiness to acquire and use survival, shelter, and recovery skills, which skills require much detailed consideration in themselves. Psychological readiness implies sufficient fear to activate worry and coping activities and to surmount the resistances expected as a result of financial and other sacrifices that preparation entails. In the extended time perspective of the cold war, preparation must be maintained and solutions reached over the entire period.

C. PREPARATION FOR NUCLEAR ATTACK

Cold-war crises have frequently initiated worry for short periods only to be followed by reassuring events and periods of confidence or indifference. To maintain worry and to motivate preparation there is a need for widespread education and organized activities in which participation in productive, goal-oriented tasks can be emphasized. These activities are considered of major importance, but are also postured in a direction diametrically opposite to current cold-war arms-control negotiations and public pronouncements by both East and West.

This brings the discussion to a critical point. Analysis of disaster studies emphasizes the importance of effective warning and preparation for civil defense. Warning for nuclear civil defense is complex and requires both realistic appraisals of danger and organized, sustained, participative activities maintained over a long period of time; yet the uncertainties regarding the danger and the very efforts to reduce it through negotiation require official postures that militate against obtaining and providing the information required for effective warning as well as against the development and maintenance of effective preparatory organization. It is extremely doubtful that an effective civil-defense effort could be mounted as long as uncertainty and vacillation prevail.

Should the situation become less ambiguous and more pessimistic, however, several further observations would be highly relevant. First, regarding public information policy, the indications based on the significance of worry and information are clear. Information should be frank, accurate, and understandable. The temptation to avoid disturbing people can perhaps be more readily restrained when it is understood (*a*) that worry instigated by the information, though unpleasant, may be both productive and protective in the face of realistic danger; and (*b*) that the alternative to unpleasant information is a series of far more unpleasant consequences. Experience in the most extreme circumstances that man has thus far confronted has repeatedly reaffirmed his capa-

cities for endurance and heroic struggle against overwhelming forces of destruction and his eventual success.

Along with information, participation should be given a high priority. This implies at the grass-roots level a far flung civil-defense organization which would not only provide appropriate training in warning systems, communication, What to do? Where to go? What alternatives to follow? When? and so forth; but also provide a basis for identification, *esprit de corps*, mutual self-help, and organized effort that has fundamental significance for postimpact survival and recovery.

The assumption of unambiguous danger is important to visualize general participation, tremendous financial investment and sacrifice of time, comfort, and freedom on a national level. Assuming this, civil defense must be constantly poised for instantaneous response to warning. The organization must have plans, equipment, and procedures equipped with sufficient redundancy that the chain of command and channels of communication would function despite extensive disruption. To minimize decision time in staff consultation and to avoid ambiguity, it should have absolute authority vested in the chain of command at every level. It should function under military-like discipline to assure coordination of effort under decisions that may not be acceptable at all times to all individuals. In short, the most effective type of defense organization at the time of crisis would be military or quasimilitary.

Such an organization is, of course, completely incompatible with the culture and climate of American democracy and would be unthinkable under any but the most extreme conditions. But should this unthinkable and most terrible extreme arrive, then the extreme remedy appears to be indicated. As suggested earlier, the possibility of mounting an effective civil defense organization under prevailing conditions of uncertainty and vacillation is considered poor. At the same time, it is believed that the goal of survival and continuation of our people (and to each one, hopefully, our selves and families) beyond the nuclear attack, would motivate the entire population for the relatively short period of the emergency and provide a rallying point for unified, organized, and productive action. This would also provide a basis for considering the adjustment problems of postnuclear existence with appropriate worry, rehearsal, information, and participation.

It is fervently hoped that such mobilization will never be necessary. The conclusion developed in the foregoing discussion is that an effective civil-defense organization and postattack social recovery effort would be virtually impossible to activate except under such very conditions. It is believed that the principles and inferences presented support this conclusion. However, this

does not imply that civil defense should be abandoned during the cold war until such time that it appears to be needed. On the contrary, at least three positive steps appear to be important as long as any threat exists. These steps are as follows:

1. Continued research and study on problems of optimal organization; protective measures; types of warning; provision for the very young and very old who may be expected to be completely dependent and require special provisions; development of policies on important issues (such as possible priorities to be assigned to categories of personnel most essential to the postattack); recovery problems; the development of mobile rescue and aid units to support stricken communities from outside impact areas; methods of training and education on survival, shelter, and postshelter skills; and many others.

2. A continuing program of education and information, working through schools and service and professional organizations to disseminate as much information as possible on significant civil-defense issues as long as the quiet period exists. Articles (by authorities) on shelters, estimates of the nature and extent of possible nuclear destruction, forecasts of conditions survivors might face after attack impact, and the like should be given widespread circulation. Motion pictures and television programs on the same subjects should not be overlooked.

3. Finally, there is a need to develop and maintain in every community both an organizational nucleus and a roster of professional, technical, and other specialized individuals and organizations that would be needed to be integrated into the mobilization effort. The organizational nucleus should provide structure, communication channels, jurisdictional policies and decision-making apparatus, authority, responsibility for assignment, training, and operation to all persons and groups involved and might be tested at times under realistic simulation conditions to insure its adequacy.

The nature of the cold war is such that a transition from indifference to urgency might occur at any time. While the public may be difficult to arouse, there is no excuse for the authorities in local, state, and Federal government to be apathetic. The people will react naively to repeated false alarms and to propaganda, as may be expected. But when the bell rings for mobilization, the government must be ready with machinery, plans, and action to get every individual busy with the work of worry, rehearsal, learning, and practice so that the greatest number will survive and emerge after the bomb and be psychologically ready to rebuild a vital society.

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DIFFERENCES IN GENERAL PERSUASIBILITY TO PEER GROUP PRESSURE BETWEEN CATHOLIC HIGH SCHOOL AND PUBLIC HIGH SCHOOL STUDENTS*

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A. INTRODUCTION

An interesting trend in recent research on conformity behavior has been centered about that aspect of such behavior that has been called "general persuasibility." As defined by Hovland and Janis, general persuasibility is that personality factor that is responsible for "a person's readiness to accept social influence from others irrespective of what he knows about the communicator or what the communicator is advocating" (5, p. v).

Much of the persuasibility research has been concerned with the relationship of this variable with such topics as personal adjustment, sex differences, intelligence differences, and parent-child relationships. Typical of such work are Diggory's study of sex differences in persuasibility (4) and Linton and Graham's exploration of the relationship of selected personality aspects (8)—as measured by the Rorschach, a human-figure drawing test, and a variety of questionnaires—and persuasibility.

While something of a general picture of the persuasible individual has emerged from such studies, it seems clear, as indicated by Hovland and Janis that:

. . . the studies obviously need replication with samples representing diverse nationalities, ethnic subcultural backgrounds, social classes, and other such attributes. In carrying out such replications, the investigators will also have the opportunity to observe the way social status and various social background factors are related to degrees of persuasibility (5, p. 246).

In line with Hovland and Janis's suggestion, one such area of persuasibility research would be an exploration of possible differences between Catholic high-school students and public high-school students. Would the authoritative leadership in the area of faith and morals characteristic of the Catholic school coincide with a higher level of general persuasibility on the part of Catholic

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high-school students, as compared with students in the public schools? Since earlier studies by King (7), Janis and Field (6), and Abelson and Lesser (1) have indicated that persuasibility is a generalized tendency extending to many areas, it was hypothesized that Catholic students in a Catholic high school would exhibit significantly greater evidence of this personality attribute than would their age and grade peers in the public schools.

B. METHOD

1. *Subjects*

Four groups of male high-school seniors, matched for age, were the *Ss* of the study. An experimental group of 41 *Ss*, along with a control group of 50 *Ss*, was drawn from a large, middle-class, urban, Catholic high school. Another experimental group of 41 non-Catholic *Ss*, along with a control group of 50 non-Catholic *Ss*, was drawn from a moderately large, predominantly middle-class suburban public high school.

While intelligence-test data (derived from the Henmon-Nelson Test of Mental Ability, Revised Edition, Level 9-12) were available for all *Ss*, it was nevertheless not feasible to match individuals for intelligence. While previous studies of the relationship of intelligence to conformity as a whole, by Berenda (2), Crutchfield (3), and King (7), have yielded contradictory and inconclusive findings, it was further hypothesized that there would be no significant differences between the mean intelligence scores of the Catholic and the public high-school experimental *Ss*.

2. *Procedure*

Persuasibility was measured through an evaluation of induced changes on the attitude scale designed by King (7), for use with high-school students. *Ss* were asked to check one of seven possible attitude categories for each of 45 items in the areas of political issues, economic policies, aesthetic preferences, academic affairs, and parent-child relationships. An example of these items is the following:

Hollywood motion pictures of novels or plays are usually as good as the originals. ———Agree strongly, ———Agree moderately, ———Agree slightly, ———Undecided, ———Disagree slightly, ———Disagree moderately, ———Disagree strongly.

In terms of equivalent score values of one to seven for each of the attitude categories in the King scale, means were computed for 36 critical items for each of the *Ss*. These item means were then summed, and a grand mean score

was computed for each of the four groups of *Ss*. These data are presented in Table 1.

An analysis of variance yielded an F value of .10 that, with three and 178 degrees of freedom, is not significant at the .05 level of confidence. Therefore, the four groups do not differ significantly in overall response to the 36 critical items.

TABLE 1
MEAN OF ORIGINAL RESPONSES TO 36 CRITICAL ITEMS

Group	Mean
Catholic experimental	4.59
Catholic control	4.63
Public experimental	4.54
Public control	4.53

Twenty-one days later the King scale was readministered to the four groups of *Ss*. The two control groups were given the scale with the same general directions used previously. The two experimental groups, however, were given the scale with a false majority response for each of the 36 items previously selected as critical. This was done by placing an "X" next to one of the extreme answer categories on each item, as determined by the mean group response on the original administration. If the *Ss*' original mean response had been in the direction of agreement, then the "X" was placed in the "Strongly disagree" category, or vice versa. *Ss* were informed that the "X" represented the judgment of their peers.

To minimize the possible arousal of the *Ss*' suspicion, nine randomly selected items (out of the original 45) were checked at the true group mean. But these items were not used. The remaining 36 items were considered the critical items and were used in computing a change score.

For each *S*, a persuasibility score was computed by using the changes in response, if any, on the 36 critical items. Changes in the direction of the check mark were designated as positive changes. Those in the opposite direction were designated as negative changes. Furthermore, changes were assigned values depending on the magnitude as well as on the direction of the movement. For example, if *S* had answered "Strongly disagree" on the original administration and "Strongly agree" on the subsequent administration (when a supposed majority peer response had been reported in the latter category), the change in response could be from plus six to minus six. The total change score for an individual *S* was the algebraic sum of all the values assigned to his changes for the 36 critical items.

Statistical treatment of the data followed the procedure used after the first administration of the King scale. In terms of change scores for each of the 36 critical items, means were computed for each of the Ss. Again, these item-change scores were then summed and a grand change score mean was computed for each of the four groups. These data are presented in Table 2.

TABLE 2
MEAN OF CHANGE SCORES FOR 36 CRITICAL ITEMS

Group	Mean
Catholic experimental	43.98
Catholic control	1.20
Public experimental	43.29
Public control	2.42

An analysis of variance yielded an F value of 202.6 which, with three and 178 degrees of freedom, is significant beyond the .001 level of confidence. Therefore, significant differences in persuasibility exist among the four experimental and control groups.

A t test was used to test for the significance of differences between the two experimental groups. As indicated in Table 2, the Catholic school experimental group had a mean change score of 43.98, while the public school experimental group had a mean change score of 43.29. A t value of .05, with 80 degrees of freedom, is not significant at the .05 level of confidence; hence there are no significant differences in intelligence among the four groups of Ss. See Table 3.

TABLE 3
MEAN INTELLIGENCE SCORES

Group	Mean
Catholic experimental	118.5
Catholic control	118.1
Public experimental	113.9
Public control	119.7

Mean intelligence-test scores for the 10 most and the 10 least persuasible Catholic experimental Ss are presented in Table 4.

The difference of 4.6 in mean intelligence-test scores yields value of .87

TABLE 4
MEAN INTELLIGENCE SCORES FOR 10 MOST AND 10 LEAST PERSUASIBLE
CATHOLIC EXPERIMENTAL SUBJECTS

Group	Mean
Most persuasible	112.6
Least persuasible	117.2

which, with 18 degrees of freedom, is not significant at the .05 level of confidence; hence there are no significant differences in intelligence between the most and least persuasible Catholic experimental Ss.

In contrast with the most persuasible and least persuasible Catholic Ss, the public-school Ss show the considerable difference of 15.1. A *t* test, with 18 degrees of freedom, yields a value of 3.5, which is significant at the .01 level of confidence; hence, for the public-school group, the most persuasible Ss are significantly lower in intelligence than are the least persuasible Ss.

Lastly, interest was focused on differences in intelligence across groups: that is, between the least persuasible Catholic and least persuasible public-school Ss and between the most persuasible Catholic and most persuasible public-school Ss. No difference was found between the mean intelligence scores of the two most persuasible groups (112.6 and 113.4 for the Catholic and the public school groups respectively); however, a considerable difference (117.2 and 128.5) was found for the two least persuasible groups.

A *t* test, with 18 degrees of freedom yields a value of 5.26 which is significant at the .05 level of confidence; hence the least persuasible of the public high-school Ss show a substantially higher level of intelligence than do the correspondingly least persuasible Catholic Ss.

TABLE 5
MEAN INTELLIGENCE SCORES FOR 10 MOST AND 10 LEAST PERSUASIBLE
PUBLIC-SCHOOL EXPERIMENTAL SUBJECTS

Group	Mean
Most persuasible	113.4
Least persuasible	128.5

C. SUMMARY AND CONCLUSIONS

In respect to Catholic and non-Catholic subcultural groups, this study was organized to follow the suggestion made by Hovland and Janis for the replication of persuasibility studies. It was designed to explore the relationship between the authoritative Catholic school culture and persuasibility among Catholic secondary-school students, as contrasted with the relationship of the nonauthoritative public secondary-school students.

No significant differences in persuasibility were found between these two groups; hence authoritative leadership in the area of faith and morals exercised by the Catholic Church (and reflected in the Catholic secondary school) is not accompanied by a higher level of general persuasibility on the part of Catholic secondary-school students.

The relationship of intelligence and persuasibility was explored. No significant differences were found. In addition, intelligence-test scores for the

most and the least persuasible students in each of the two subcultural groups were compared. For the Catholic group, no significant differences were found. For the public-school group, significant differences were found, with the least persuasible Ss making the higher scores.

Subcultural comparisons in intelligence were made across groups. While no significant differences were found between the two most persuasible groups, such differences were found between the two least persuasible groups, with the public-school group making a markedly better showing.

The salient fact that emerges from this investigation is that a particular type of religious subcultural control (popularly held to be conducive to the development of general persuasibility, and in a larger area, to social conformity) did not appear to be related to these personality traits among a group of adolescents subject to such control. Moreover, the study indicated that the only appreciable differences in persuasibility growing out of the experimental situation were related to differences in intelligence within a group not subject to this kind of religious subcultural control or in groups cutting across subcultural controls. Previous persuasibility research has assigned a dubious status to intelligence as a factor in persuasibility. The positive if partial findings in relationship to intelligence, as well as the unexpected findings in relationship to subcultural controls, indicate the need for further exploration along these lines.

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MOTIVATIONAL AND PERCEPTUAL EFFECTS IN ORIENTATION TOWARD A NEWCOMER* 1, 2

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A. INTRODUCTION

The advent of a newcomer to the group is followed almost invariably by processes of interpersonal orientation between each of the host-group members and the new member. In this process, a variety of sources of information about the newcomer are sought: direct exchange with the new member, exchange among the host-group members, exchanges with members of the donor group, and personal documents.

The generally observed avidity with which this information is sought is scarcely surprising. As a complex of novel stimuli, the newcomer arouses curiosity and exploratory activity on the part of everyone. Moreover, since group members are interdependent and share a common fate, it behooves them to learn what to expect of the new person as well as his expectations with regard to themselves. In addition, the group as a social frame of reference, is altered automatically with any change in its membership. The status structure must be reexamined, and formal and informal roles may be redefined. Any of these changes initiates information search concerning the characteristics of the new member.

Although interest in the newcomer is presumed to be general, it is also proposed, as revealed by personal information search, that it varies in relation to some of the basic social elements of the situation: the nature of the host group, the characteristics of the host-group members, and the characteristics of the new member. In the two studies reported here, each of these components of the social situation was examined.

B. STUDY I

The first study concerned the relationship of high and low achievement-motivated members and Negro-White newcomers to White member's interest

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² A part of this report was presented at the APA Convention on September 2, 1961.

in the newcomer, which interest was assumed to be related to memory of information from the newcomer's biographical data sheet distributed individually to the host-group members in advance of the new member's arrival. The intervening variable was assumed to be individual categorization proclivities.

Paralleling Allport's cognitive or categorization approach to prejudice (1), it was assumed that man (with his limited capacity for information storage and retrieval), when presented with a large array of potential stimuli, has recourse to categorization. In this process, the essential attributes of the objects in the stimulus field are abstracted, and similar stimuli are grouped in such a way as to render the field of objects more manageable to the human intellect. The perceiver's abstracting tendencies with regard to a large amount of information about the newcomer were presumed to be a function of the race of the newcomer and the achievement motivation of the perceiver.

1. Hypothesis 1

There is a greater tendency to respond categorically to an imminent newcomer when he is a member of a minority as opposed to a majority group.

This hypothesis derives, in part, from information theory. In a group composed of one Negro and three White members, the Negro is readily identified by race. To distinguish among the White group members, however, more than one bit of information is required. Thus race, like sex and other external differentiating characteristics of individuals, is useful (albeit to a limited extent) in discriminating among members of a group and in identifying an individual within a group. However, these external differentiating characteristics tend to cause members to assimilate information that is not meaningfully related (1) and this leads to unwarranted reliance on an ill-defined category. For example, a wide variety of personal characteristics are associated and polarized with regard to Negro as contrasted to White. A recent series of short stories written by a Negro (3) about Negroes was entitled *Nobody Knows My Name* and implied that, for some persons, knowing the race of another person renders unnecessary further information or differentiation. Thus it is proposed that knowing that the imminent newcomer is a member of the Negro race tends to retard personal information search concerning him. Moreover, knowledge of race is presumed to have a retroactive effect on recall. It is proposed that bits of information are distorted in a levelling process that facilitates the application of the obtrusive and convenient race category.

2. Hypothesis 2

Under group problem-solving conditions, an imminent newcomer as an individual assumes greater significance to a high need-achievement member than to a low need-achievement member.

Since high need-achievement members have been found to be success oriented (6), it was proposed that under conditions of group problem solving, the relative contribution of the individual members to group-goal achievement becomes a critical concern of high need-achievement members in comparison with low need-achievement members. The high need-achievement member was expected to acquire as much information as is available about the new member in order to assess his relative abilities in relation to theirs and to gauge his expected contribution to group-goal achievement.

3. Procedure

a. Subjects. Sixty-four White male, summer-school students from the University of Delaware were assembled randomly in 32 groups of two members each.

b. Procedure. The subjects were told that the study in which they were participating was designed to investigate means of improving group decision-making procedures and would be conducted through a standard note-passing apparatus in which the members were unable to communicate visually with each other.

At the outset, the members were permitted to exchange notes containing information about themselves in order to "speed up the interpersonal-orientation procedure which usually takes place in the early stages of group development." Next, the members were presented with a task in which the group was required to submit an estimate of the number of dots on a slide exposed for only two seconds. The task required about 10 minutes. The performance of the group was *always* evaluated publicly as having been "better than that of about 80 per cent of the other groups who had previously worked on the task." This positive evaluation of group performance was provided on the assumption that group success expedites group development.

The host-group members were told that they would be permitted to read the newcomer's biographical inventory prior to his introduction in order to assist them in becoming acquainted with him. Each member was permitted five minutes to review the inventory. Two separate inventories were distributed. One subject received a biographical inventory of a Negro. The second subject received the same biographical inventory with the exception that the newcomer was "Caucasian."

Nine pages of the biographical inventory had been assembled in a random order for each subject. The item concerning race was the first item on one of the nine pages and it could be the first item on any of the other eight pages depending upon the random order. This random arrangement of the pages of

biographical information permitted an analysis of the members' orientation processes with reference to the new member by avoiding, to some extent, possible serial effects.

To facilitate forgetting, French's measure of need achievement (4) was administered as an interpolated task between the biographical review and recall phases of the session. The subjects were permitted 10 minutes to complete the need-achievement questionnaire, after which they were asked immediately to recall as much biographical information as possible about the newcomer. Upon completion of this unaided recall, subjects were asked to complete nine randomly assembled pages of the biographical questionnaire as the newcomer had completed it. Finally, subjects were asked to check the five items that they thought "were most helpful in formulating a clear impression of the newcomer." Here the experiment was terminated without introducing the "new member."

4. *Instruments*

The measure of need achievement was the device developed by French (4). The items are single-sentence descriptions of behavior presented as typical of hypothetical individuals with whom subjects can identify: for example, "Tom always lets the other fellow win." The subjects are instructed to "explain" the behavior. The instrument assumes that the subject with high-achievement motivation, for example, will project this level into his interpretation of "Tom's" behavior when the cause of "Tom's" behavior is unclear and when an interpretation in terms of achievement is not unreasonable. The first form of this instrument was employed. The score is the summation of achievement-oriented responses, as judged by trained raters. Interrater reliability in the present study was 0.70.

The initial form of the biographical inventory consisted of 40 items. Two standard "newcomers" differing markedly in socioeconomic background and in religious and political affiliation completed the questionnaires. The use of more than one "newcomer" permits generalization of the results pertaining to orientation processes beyond the single focused newcomer. Analysis of the results of a pilot study indicated that astonishingly few items were missed, thus to facilitate forgetting, the number was increased to 58 in the present study.

5. *Results*

The errors in aided recall of biographical information were analyzed by means of a two-by-two factorial design including Negro-White newcomers as the main independent variables in addition to the two different biographical

inventories. No statistically significant differences in errors of recall were found in relation to the two different biographical inventories.

The race variable was found to be related significantly to recall ($F = 4.91$; $n_1 = 1$, $n_2 = 28$; $p < .05$). Less information was recalled with a Negro than with a White referent (9.9 errors *vs.* 6.2 errors).

A similar analysis of variance with regard to unaided recall rather than aided recall indicated similar results. Only the main effects of race were found to be statistically significant ($F = 4.91$; $n_1 = 1$; $n_2 = 28$; $p < .05$).

It will be recalled that French's Insight test, from which the measure of achievement motivation was derived, was administered as a buffer task between the presentation of the biographical inventory and the recall phases of the procedure in order to facilitate forgetting. Necessarily all subjects were required to terminate the interpolated task after 10 minutes; consequently only 28 subjects responded to a minimum of seven items.

In a two-by-two analysis-of-variance design relating high-low need achievement and Negro and White "newcomers" to aided recall of biographical information, it was necessary to remove randomly four cases from three of the four cells in order to equate the number of subjects per cell. The results were not statistically significant. It was observed, however, that the subjects with high need-achievement scores and a White newcomer erred the least. Similar results were observed with regard to unaided recall; but again, the results were not statistically significant.

In analyzing the interpersonal orientation process toward the imminent newcomer in general and toward a Negro as compared with a White newcomer, four sources of data were available: (a) the frequency with which the biographical items were omitted in unaided recall; that is, under the conditions that the subjects were asked to recall as much biographical information as possible about the newcomer without reference to the biographical questions; (b) the frequency with which the biographical information items were listed among the first five under conditions of unaided recall; (c) the frequency with which the biographical information items were wrong under conditions of aided recall; that is, under conditions of random assembly of the uncompleted pages of the biographical inventory; and (d) the frequency with which the biographical items under conditions of aided recall were checked as one of the five most helpful in formulating impressions about the newcomer. Because omissions in unaided recall differentiated among the items to a greater extent the results will be reported with respect to this criterion.

The items concerning academic status were omitted least frequently. Thus, the students' academic classification (freshman, sophomore, junior, or senior)

was first on the list and college major was seventh. It must be noted, however, that academic classification is also an indicator of age.

The next category of items that was omitted infrequently concerns phenomenological characteristics of the newcomer; that is, height, age, and race in second, third, and fourth rank order. It is noteworthy, however, that the sex of the newcomer was in the 31st position on the omission criterion; but ranked with height, age, and race in the other three criteria.

Surprisingly, whether or not the newcomer smoked cigarettes and drank alcoholic beverages were sixth and seventh on the list respectively. Furthermore, the ranking was similar with regard to all four criteria.

The next set of items in terms of frequency of omission under conditions of unaided recall concerned the socioeconomic status of the stranger. This category included items describing the value of the parent's home, highest salary earned, and father's occupation (11th, 12th, and 15th ranks). Disappointingly, the newcomer's attitude toward psychology was relegated to the penultimate position in importance.

The frequency with which each item was omitted under unaided recall was also analyzed in terms of the race of the "newcomer." It will be remembered that more items were omitted when the newcomer was a Negro. As might be expected, however, with regard to race itself and when the newcomer was a Negro, race was omitted only four times. The chi-square test was significant at the .001 level of confidence. None of the other items discriminated between the White and Negro newcomer.

6. Discussion

The hypothesis that there is a greater tendency to respond categorically to an imminent newcomer when he is a member of a minority group than when he is a member of a majority group was supported by the results. Less information was remembered about the Negro newcomer both with reference to aided and free recall of biographical data ($p < .05$). The hypothesis was supported further by the finding that although less information was generally recalled about the Negro newcomer, under conditions of unaided recall the information concerning his race was rarely omitted; but was often omitted with regard to the White newcomer ($p < .05$). It was assumed that information concerning race adequately categorized these minority group members for some of the subjects; thus rendering further information less necessary. Finally, the race category was presumed to assimilate unrelated information items, thereby serving to obscure the details of individual delineation.

The frequency with which the various items were omitted in unaided recall, were wrong in aided recall, were listed among the first five in unaided recall, and were checked as being one of the five most helpful in formulating an impression of the newcomer presented unique data from which the interpersonal-orientation process was analyzed from the point of view of the core group members. Necessarily, the interpretations are limited to the subject population, summer sessions students at the University of Delaware, and by the characteristics of two specific "newcomers."

Still, the results suggest that, within the frame of reference of the present study, academic information was one of the most prominent categories of information remembered about the newcomer. This was followed by items concerning physiognomy (height, age, race), moral considerations (religion), political orientation (attitude toward the President of the United States), and finally, economic considerations (father's occupation, highest salary earned, value of parent's home).

C. STUDY II

The second study was designed to correct the shortcoming of the preceding experiment, particularly with regard to the measure of need achievement. These shortcomings include the restricted sample of the subjects; the abbreviated form of French's measure of need achievement lending itself, perhaps, to reduced reliability; and the possibility that the motivational measure may have been influenced by the experimental conditions, since the instrument was interpolated between the study of biographical inventory and an aided recall test. Moreover, the findings of the first study were restricted to the advent of the newcomer to a dyad. Thus, the present investigation was designed to study in a more systematic fashion the effects of need achievement on memory for biographical data of a Negro or White newcomer under conditions of varying group size.

The hypotheses with regard to Negro or White newcomers and need achievement were the same as those presented in Study I. In addition it was predicted that, as the size of the host group increases, the newcomer assumes less salience and power. The latter hypothesis is redolent of Weber's Law, but more directly infers a relationship between group size and structure as it pertains to the newcomer's role and power. As the group increases in size, a more systematic and less flexible interaction procedure is required (7). Thus it was assumed that, as the size of the host group increases from one to three members, the onus of adaptation devolves to the newcomer rather than to the host-group members.

1. *Method*

One hundred twenty-two White male college undergraduates at the University of Delaware were given French's Test of Insight and then worked alone, in pairs, or in groups of three on two group tasks: i.e., creating captions for a cartoon and judging the more artistic of two similar pictures (an item from the Maier Art Judgment Test). In contrast to Study I, communication was not restricted through the use of the note passing apparatus. There were no visual barriers between subjects, and free vis-à-vis discussion was permitted.

Each subject studied a biographical inventory consisting of 58 items presumably completed by a "new member" who was to join the group for the remaining two tasks. The inventory was presented to each group member for five minutes as "a procedure designed to speed up interpersonal orientation." Half of the subjects received the inventory describing the newcomer as a Negro. All other biographical information on the two forms was identical. As in the first experiment, the items of the inventory were randomly assembled by page.

Finally, an interpolated activity lasting 10 minutes was followed by an aided recall test for memory of the "newcomer's" biographical information. The aided recall test consisted of 58 true-false items presented in a fixed sequence. The unaided recall measure employed in the first study was omitted because of time restrictions.

2. *Results*

On the basis of need-achievement scores, the sample of subjects was divided into high and low groups using a median-split technique. The addition of this independent measure completed a size-by-race-by-achievement factorial design consisting of 12 experimental conditions with six subjects in each cell. The analysis of variance is summarized in Table 1. The two first-order interactions

TABLE 1
ANALYSIS OF VARIANCE OF ERRORS IN AIDED RECALL IN RELATION TO SIZE OF THE HOST GROUP, RACE OF NEWCOMER, AND NEED ACHIEVEMENT OF HOST-GROUP MEMBERS

Variable	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Group size	2	14.28	—	—
Race	1	26.89	1.68	—
Need achievement	1	16.06	1.00	—
Size × Race	2	60.72	3.79	.05
Size × Need Achievement	2	.39	—	—
Race × Need Achievement	1	88.89	5.55	.05
Size × Race × Need Achievement	2	8.74	—	—
Error	60	16.01	—	—

involving race of the newcomer (race by size, and race by need achievement) were statistically significant ($p < .05$). Most errors in aided recall were made in the alone, White-newcomer condition (see Table 2). In addition, the great-

TABLE 2
MEAN NUMBER OF ERRORS IN AIDED RECALL ACCORDING
TO SIZE OF HOST GROUP AND RACE OF NEWCOMER

Group size	Race		Combined mean
	Negro	White	
Size 1	10.2	15.0	12.6
Size 2	12.6	12.6	12.6
Size 3	11.3	10.7	11.2
Combined mean	11.5	12.8	12.1

est differences in recall of biographical information of the White as opposed to the Negro newcomer were observed under the high need-achievement conditions (see Table 3). The least number of errors occurred under the Negro-

TABLE 3
MEAN NUMBER OF ERRORS IN AIDED RECALL ACCORDING TO RACE OF NEWCOMER
AND NEED ACHIEVEMENT OF HOST-GROUP MEMBERS

Variable	Race		Combined mean
	Negro	White	
High need Achievement	9.9	13.4	11.7
Low need Achievement	13.1	12.1	12.6
Combined mean	11.5	12.8	12.1

high conditions; the most errors were exhibited in the White-high conditions. Overall, less information was recalled about the imminent Negro newcomer, but the results were not statistically significant.

3. Discussion

Differences in recall of biographical information of an expected newcomer appear to depend on the race of the new member and the size of the host group. Since most information was recalled in the one-Negro experimental conditions and least information in the one-White condition, it may be hypothesized that race differences are most salient in the one-person situation, the effects being attenuated as size increases. One possible interpretation of these results is that, in the United States, members of the White majority are accustomed to interacting with Negroes only when the latter are in the minority. Thus, when a member of the White majority finds himself in the unwonted situation where he and a Negro are to work on a series of problems together, the possibility of invidious comparison with a minority group member may be threat-

ening or perhaps, merely the strangeness or the unusualness of the situation may introduce an anxiety component. On the basis of either of these assumptions, it was proposed that by acquiring more information about the Negro newcomer the probability for compatibility is enhanced through predictability of and adjustment for idiosyncrasies.

Contrary to expectations, a positive relationship was found between recall of the White newcomer's biographical data and size of the original group (see Table 2). In the theoretical basis of the hypothesis concerning group size, it was proposed that as group size increases from one to three, the group structure becomes less flexible. Thus, in larger groups, the responsibility for adaptations is perceived by the host-group members as residing with the newcomer rather than with the group. It now appears that as assimilation difficulties increase with increasing group size, information concerning the new member becomes increasingly instrumental in predicting and facilitating the individual's adjustment and in minimizing group disruption.

The significant differences between high and low need-achievement subjects' recall of biographical information in accordance with the newcomer's race also appears compatible with the explanation involving the instrumentality of information search. Assuming that need-achievement subjects are success oriented (6), the acquisition of personal information about the new member in the problem-solving group is helpful to the high need-achievement subjects in predicting the future performance of the group. Thus, it is seen (Table 3) that, in general, high need-achievement subjects recall more information about the newcomer, although the results are not statistically significant. The acquisition of personal information about the Negro newcomer in the problem-solving group is hypothesized to be particularly salient to the high need-achievement member. Since success or failure is a dominant concern of the high need-achievement member, a change in group membership is associated with a potential change in group performance. Through interpersonal-orientation procedure, the newcomer's behavior is rendered more predictable and stable in the eyes of the high need-achievement host-group member and anxieties concerning group success or failure are allayed through interpersonal information acquisition. The effect is presumed to be greatest in the event of a Negro newcomer because of the unfavorable Negro stereotype with reference to academic performance. Moreover, the possibility of invidious comparison with a minority group member may be particularly poignant with regard to the high need-achievement subject.

In the first experiment, less information was recalled concerning a Negro newcomer. The results of the second study, although not statistically signifi-

cant, were in the opposite direction. The age differences in the subjects (freshmen and sophomores *vs.* teachers returning for graduate training) or the less restricted visual and verbal communication among the subjects in the second experiment may have attenuated the results. Tentatively, it is proposed that vis-à-vis interaction permits or is perceived as permitting greater control over the social environment; thereby diminishing the requirement of interpersonal information search in order to improve the prediction of interpersonal compatibility and group productivity. The greater recall of information in Study I may be cited in support of this hypothesis, although other differences in the experimental conditions may well explain the different results.

The interpersonal orientation processes and group problem-solving processes of vis-à-vis as opposed to remote interaction is suggested as a topic for future research. The recall of biographical information may be used as a technique to explore differential interpersonal-orientation procedures among cultures and among groups within cultures. For example, differences in recall by members of various socioeconomic, race, and sex categories may be employed to explore differences in values with regard to interpersonal orientation.

D. SUMMARY

Two laboratory experiments are reported which analyzed the regular group-member's reaction to the advent of an imminent newcomer under varying characteristics of the host group, the host-group members, and the new member. Recall of biographical information concerning the imminent "newcomer" served as the dependent variable. The "newcomer" was, of course, a standard person who was never introduced, in person, to the group.

The first experiment concerned the relationship of high and low achievement-motivation members and Negro-White newcomers to interest in the newcomer. It was found that more information was recalled about the White than about the Negro newcomer. The results were interpreted as supporting Allport's theory of prejudice toward Negroes: namely, that the race category tends to be overgeneralized, thereby rendering further information search less salient. The orientation process with reference to the newcomer was also explored. It was found that academic status was perhaps most prominent, followed by physiognomic, religious, political, and economic information.

The second experiment was designed to study in a more systematic fashion the effects of need achievement on recall of biographical data of a Negro or White newcomer under conditions of varying group size. All three independent variables were found to be related to recall, but the effects were interactional. In general, acquisition of knowledge about the newcomer was inter-

puted as an attempt to reduce the anxiety associated with the advent of a newcomer through more thorough knowledge of him as an individual.

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SEX DIFFERENCES AND SUSCEPTIBILITY TO INTERPERSONAL PERSUASION*¹

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A. PURPOSE

Previous studies have found female subjects to be significantly more persuasible than males in mass communication situations (2, 3). In addition, the present investigator has observed that female subjects in the autokinetic situation appear to be more susceptible to the influence of a confederate's judgments than do male subjects (6). In that study, however, another hypothesis was under investigation; and conditions were such that no definite conclusions in this regard could be reached.

The present investigation was conducted to determine if there are sex differences in susceptibility to interpersonal persuasive influences. The hypothesis was that female subjects will show greater susceptibility to the influence of a confederate's judgments in the autokinetic situation than will male subjects.

Also under investigation in the present study is the effect of the sex of the confederate as a variable in persuasion. In this connection it was hypothesized that a male confederate will exert greater persuasive influence over both male and female subjects than will a female confederate.

B. METHOD

Twenty subjects (10 male and 10 female), selected from general-psychology classes, were given one session alone in the autokinetic situation. During that session each subject made a series of 20 judgments separated by approximately one-minute intervals. Under such conditions, subjects establish a standard of judgment that is maintained under similar conditions in subsequent sessions (4).

Twenty-four hours later, the subjects again reported to the experimental room. In this case, however, they were told that another subject (the confederate) had been unable to keep a previous appointment and that they both would be run together in the experiment.

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For this session, male subjects were divided into two groups. Subjects in one group served with a male confederate, while subjects in the other group served with a female confederate. Female subjects were similarly divided into two groups. As in the case of the males, one group served with a male confederate and the other with a female confederate.

In the second session, the confederate's judgments were based on each subject's judgments in the first session. The range of the confederate's judgments was the same as the range of judgments used by the subject in the first session. The median of the confederate's judgments, however, was one inch higher than the subject's largest judgment in the preceding session. Thus, if the subject made judgments between two and six inches in the first session, the confederate's judgments in the second session were from five to nine inches. In a previous study, it was shown that this discrepancy in judgments between confederate and subject yields the greatest change in the subjects' judgments (5).

C. RESULTS AND DISCUSSION

For each subject, the medians of judgment in the first and second session were computed. To obtain a change score between sessions, the median in the second session was subtracted from the median in the first session. The change scores for all subjects with the male confederate are shown in Table 1. Negative scores indicate that the subject's median decreased in the second session, while positive scores indicate an increase in the magnitude of judgment.

TABLE 1
SEX DIFFERENCES IN CHANGE SCORES WITH MALE CONFEDERATE

Male subjects		Female subjects
	1.04	5.35
	2.83	2.67
	1.30	4.57
	2.75	3.80
	.60	5.80
Mean	1.70	4.43

Wilcoxon's test of unpaired replicates, applied to the change scores, indicates a difference significant beyond the .05 level. Thus female subjects are significantly more persuasible than male subjects.

The change scores for subjects with the female confederate are shown in Table 2. Wilcoxon's test was also applied to these scores, and the difference was found to be significant beyond the .07 level. In these data, however, as compared with those in Table 1, all of the male subjects revealed negative changes in judgment; that is, they shifted away from the confederate.

These results also suggest that females are more susceptible to interpersonal

persuasive influences than are males. In line with the previously cited work in the area of sex differences in persuasibility, it appears that such differences may be generally observed in response to any persuasive influence, regardless of the media involved; hence it seems plausible to conclude that such differences reflect culturally determined personality characteristics. Other investigators (1, 2, 3) have also reached this conclusion.

TABLE 2
SEX DIFFERENCES IN CHANGE SCORES WITH FEMALE CONFEDERATE

	Male subjects	Female subjects
	— .74	.90
	— .23	1.14
	— .50	— .08
	—2.25	0.00
	—6.09	—3.25
Mean	—1.96	— .23

When the change scores for male subjects with a male confederate were compared with those for males with a female confederate, the difference was significant beyond the .01 level. Similarly, the difference in change scores for female subjects with male and female confederates proved to be significant beyond the .01 level.

These data indicate that male "influence sources" have a significantly greater persuasive effect than female sources, regardless of the sex of the subjects. In this connection it was observed that both males and females were influenced by the male confederate, but that females were influenced to a much greater degree. With the female confederate, on the other hand, both sexes revealed a net negative change. The influence in this direction on male subjects, however, was generally more pronounced than on female subjects.

This study raises an important question in connection with one variable involved in mass communication and persuasion. It is possible that male sources are generally more persuasive than female sources, regardless of the issues involved or the media employed. In broadcasting that is designed to persuade, and when the sex of the speaker is clearly apparent, the male commentator may be significantly more effective than the female. Furthermore, such differences may be accentuated in cultures in which the feminine role is even more submissive and acquiescent than in our own. Additional research is needed to verify this hypothesis.

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RELATIONSHIP BETWEEN RATED LEADERS AND THE TRAITS ASSIGNED TO THESE LEADERS*¹

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A. INTRODUCTION

It is obvious that we form impressions of the people we meet. Many times these impressions are inaccurate, yet it determines our behavior in relation to that person.

Secord, Dukes, and Bevan (2) found that people tend to agree on a person's personality on the basis of his picture. These judgments were not accurate, but the index of agreement was high. Stritch and Secord (4) later found that one could change certain attributes of the face, such as mussing up the hair, and the rater would ignore this trait and rate the person in terms of the total profile. In other words, if the person were rated initially as neat in appearance, he was still rated as neat even though this was illogical: i.e., he looked everything but neat with his hair mussed up.

Stritch, Frye, and Rabin (3) attempted to study the ability of persons to agree on personality and physiognomical traits on the basis of a person's voice. Again, with auditory cues they found that subjects could agree as to the type of personality and could even guess how the individual looked. On the basis of that study, it was hypothesized that blind people (since they are probably more sensitive to auditory cues) would rate the personality and physiognomical traits of these subjects different from the sighted population. A study by Walley (5) found no difference between the ratings of blind and sighted subjects when the Ss were presented an auditory cue.

Bond (1) attempted to present a more complicated stimulus pattern to the subject in order to evaluate its effect. He provided the subject with a picture of a male face and at the same time played a recording of his voice. He discovered that the voice stereotype and the visual stereotype were not the same. On the basis of the picture alone, the person may be rated as honest; while on the basis of his recorded voice, the person may be rated as dishonest. When the subject had both an auditory cue and a visual cue he rated in favor of the

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visual cue. The author hypothesized this to be true because an individual was more accustomed to formulating a stereotype on the basis of visual rather than on the basis of auditory stimuli.

Because of the consistency of these results, the experimenters became concerned about the effect of response set on their ratings. Since a seven-point rating scale was used in most of these studies, the tendency for people to rate around the middle of the scale would lead to spuriously high indices of agreement. To test for this possibility, Stritch, Frye, and Rabin (3) carried out two experiments. One was an ESP study in which the subjects were told that the experimenter had completed a rating form on a subject and wanted them to see whether, through the use of ESP, they could duplicate the experimenter's rating form. It was hypothesized that if a response set existed, relatively high indices of agreement would be obtained among raters using this technique. The agreement indices were low. The subjects could not agree on whether the person was initially rated by the experimenter as high in friendliness or low.

The second series of studies varied the type of scale. No significant difference was found between ratings made on the different scales. Regardless of the scale used, the difference between the ratings of pictures was significant. This study also indicates that the response-set factor is relatively unimportant in this type of research.

Since, from these studies, it appears that there is a high level of agreement among ratings based on limited cues of the personality and physiognomy of a person, one would expect the subjects to agree as to which was the picture of the leader if presented with a number of pictures. Thus, the purpose of the present study was to determine the agreement of people in choosing a leader; to determine the traits that are considered important to leadership; and to measure the reliability of these ratings and rankings.

B. PROCEDURE

The *Ss* consisted of 200 students, 100 from each of two universities. The students were enrolled in the introductory psychology course. As the difference between the two samples was not significant, the *E* treated the 200 cases as one sample.

Via an opaque projector, the subjects were initially shown 10 pictures of males faces and asked to rank them from one to 10 in terms of leadership ability. The picture of the most able leader was assigned a rank of one, and the picture of the least able leader was assigned a rank of 10.

Next, the 10 pictures were presented one at a time and the subjects were

asked to rate each picture on 28 traits considered by *E* as important to leadership. See Table 1. Some of these traits were taken from factor-analytic studies of leadership. Others were hypothesized as being negatively or positively related to leadership, on the basis of Bass' theory of leadership and interpersonal relations.

Two weeks following the initial testing, the test was readministered to the same subjects in order to evaluate the reliability of the ratings and rankings.

TABLE 1
LEADERSHIP TRAITS INCLUDED IN RATING SCALE*

No.	Trait	No.	Trait
1.	Friendly	16.	Outgoing
2.	Cooperative	17.	Sense of humor
3.	Intelligent	18.	Welfare of the group
4.	Willingness to work	19.	Consistent
5.	Will support men working for him	20.	Depends on others
6.	Will make men want to work	21.	Suspicious
7.	Harmony in group	22.	Radical
8.	Self-centered	23.	Fair
9.	Ability	24.	Will get the job done
10.	Power	25.	Talkative
11.	Initiative	26.	Concerned with the happiness of others
12.	Maturity	27.	Competitive
13.	Conformity	28.	Hypocrisy
14.	Considerate		
15.	Creative		

* Each of the traits was followed by the numbers 1 to 7. The judges were asked to circle a number to indicate the degree to which the person possessed the trait.

C. RESULTS AND CONCLUSIONS

The results confirm the existence of a leadership stereotype. Based on split-half correlations, the agreement indices as to who was the leader for the two samples were .93 and .75. These correlations indicate a high degree of agreement between *Ss* as to the leader, but the data indicate that the ratings were inaccurate. This conclusion has not been confirmed statistically because *E* did not rank the occupational level of each person and compute the correlation, but there appears to be significant disagreement between the rated leader and the true leader. The persons rated as leaders do not appear to have discernible identifying physical characteristics that differentiate them from the persons rated as nonleaders.

The agreement indices varied among the 28 traits. With some of the traits, such as ability to motivate, ability to maintain harmony in the group, ability, creativity, sense of humor, concern with the welfare of the group, will take

time to listen to problems, and talkative, the agreement indices were above .90. With other traits, such as hypocrisy and self-centeredness, the agreement was about .40. *E* believes that part of the variation in degree of agreement is due to the lack of "cognitive categories" for some of the areas. Vidulich (6) has found that when subjects are required to describe persons without a checklist they tend to use very few words, and the amount of overlap of terms is not as high as one would expect on the basis of everyday observations. Thus, an individual is more likely to use familiar terms from his own vocabulary, such as "friendly" or "humorous" or "angry," rather than other terms, such as "hostile" or "hypocritical." With the more familiar terms, there will probably be a higher degree of agreement among raters than one would expect with the more ambiguous concepts.

The test-retest reliability of the ratings and rankings were higher than expected by *E*. The test-retest reliability of the rankings of leaders was .91. After a two-week period, the measure of reliability of the ratings of traits was .90.

Once a person was identified as a leader, *E* was interested in the traits that were assigned to him. In other words, *E* felt that the subjects would rate a leader high in the traits that they considered essential for effective leadership, thus resulting in leadership stereotypes.

The traits rated high and low in terms of perceived leadership, that is rated high for the persons rated as leaders and rated low for the persons rated as nonleaders, include intelligence, ability, consideration for others, willingness to support the group, emotional maturity, willingness to listen to problems, power, concern for the harmony of the group, creativity, and consistency. Traits negatively related to perceived leadership are suspicious, radical, self-centered, and hypocritical. Some traits, such as outgoing, cheerfulness, and tendency to complete task, do not relate consistently with rated leadership.

On the basis of this study, it appears that leadership stereotypes exist, and that these stereotypes are consistent over time as indicated by rater reliability. How these stereotypes affect behavior is yet to be determined. The results of this study suggest that limited cues, such as pictures of faces, affect persons' perceptions of leaders follows that these stereotypes have some influence on the probability of a given individual emerging as a leader in a new situation.

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PERSONALITY PROFILES IN INDUSTRIAL AND PREINDUSTRIAL CULTURES: A TAT STUDY*

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A. INTRODUCTION

The present study was part of a larger investigation "Impact of technology on personality and values" (3) that attempted to explore the relevance of personality patterns to the problem of industrial and technological change. The aim was to see to what extent the traditional value system of India is hospitable to the new values of industrial culture. The author wished to ascertain whether or not there are unique personality patterns in rural and urban societies. Other important questions were "What is an 'industrial personality'?" and "How gauge the difference, if any, between industrial and preindustrial personality configurations?" The questions that seem relevant are as follows: "Are the differences basic or 'core' differences or just situational differences?" "Is there a *basic* personality pattern?" "Are the differences radical and, if so, how do they cut across cultures and value systems?"

For the purposes of this paper, the term personality will mean ". . . an organization of behavior within the framework of relevant culture, social structure, technological pattern, and the systems of values" (5). This definition is eclectic, functional, and field-theoretically oriented. By using the terms industrial and preindustrial the aim is not to emphasize the dualistic rigidity associated with any such typology, but to find continuity of change from one type of social organization to another. It is assumed that societies or cultures can be divided roughly into three kinds: preindustrial, partially industrial, and highly industrial. A society is industrialized to the extent that, in the allocation of goods and services (production, distribution, and consumption), its members utilize (*a*) tools that multiply in a complex manner and (*b*) inanimate sources of power and energy. Thus there is no society that is completely nonindustrial, but we can distinguish a highly industrialized from a less-industrialized society.

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B. METHOD

It is assumed that systems of technology and child-rearing practices correlate with the patterns of values and structure of personality in any society. To determine these dimensions, the Thematic Apperception Test (TAT) was selected. It was used mainly to overcome difficulties, like unwillingness on the part of subjects to reveal intimate information, reluctance to express true attitudes, fear of social disapproval, or inability to give the desired information because of poor expression or because of unawareness of own feelings and attitudes.

1. *Population and Sample*

The population represents two distinct technologies: a highly industrialized, educated, urban technology; and a preindustrial, uneducated, and rural technology. Care was taken to see that, so far as possible, the sample should represent all the important variables, like caste, class, religion, age, sex, etc. The total number of cases was 10. Five were from the industrial-urban group. Five were from the preindustrial group.

2. *Selection of Cards*

From Murray's original set (4), eight cards were selected. These were Cards 2, 3 (BM or GF), 4, 6, 7, 8 (BM or GF), 13 (MF), and 18 (BM or GF). Two main considerations determined the selections. These were (a) the criteria suggested by Bellak (1) and (b) the stimulus properties described by Henry (2). In addition, the nature of the investigation to be made was a factor.

The major point of the study was to determine aspirations and achievement, anxiety, conflict, and tension in relation to the introduction of technology. The stimulus material had to yield information about these areas, as well as that needed to validate and confirm the findings produced by the use of other techniques. The cards selected were thought to represent a common theme in industrial and preindustrial areas. Specific detail about each of the cards follows:

a. *Picture 2.* This picture gives an indication of a person's family relations. It "... also offers themes of autonomy from the family *versus* compliance with the conservative *backward existence*." Interpersonal relationships within the family and the role of the sexes are the main variables relevant to the present study.

b. *Picture 3 BM.* This picture is supposed to reveal feelings of loneliness in the subject. It is assumed that the stimulus material arouses associa-

tions of loss, guilt, attack, and aggression.

c. *Picture 3 GF*. This picture may also reveal depressed feelings. It is particularly helpful with females.

d. *Picture 4*. This picture brings out a great variety of needs and sentiments. "The plot's central issue is generally some explanation of the reason for the woman's appearing to restrain the man and of the direction of the action of the man." Man's conformity or nonconformity with the wishes of women also finds expression in the themes. Mention of sexual problems and triangular jealousy are not uncommon.

e. *Picture 6 BM*. This picture reflects the problems of mother-son relationships and their derivatives in relation to wives and other women. The picture deals with the attitude of the subject toward mother figures, particularly with the idea of separation or discord in that relation. In terms of the reaction to the possible authority of the mother as reflecting the stable and traditional, the picture is useful in working with adults. The breaking of the relationship just mentioned reflects ability to activate new ideas and projects. In other words, the picture provides opportunity to measure attitude toward authority.

f. *Picture 6 GF*. This picture is a counterpart to Picture 6 BM and reflects the relationship of females to the father.

g. *Picture 7 BM*. This picture concerns family relations. It reflects father-son relationships and their derivatives (in males). It also is relevant to the contrast between the younger and less experienced and the older and more experienced. The picture reflects attitude toward the father and other authority figures.

h. *Picture 7 GF*. This picture gives clues about mother-child relationships in females. It encourages negative attitudes toward the mother. Also it may reflect attitudes toward an authority figure, such as a governess, a teacher, or an aunt.

i. *Picture 8 BM*. This picture is thought to reveal a person's aggressive feelings or his ambitions and achievements. Henry agrees with Bellak and writes that "this picture reveals subject's reality orientation as well as his ambition and future planning skill." In addition, it gives some indication of authority patterns.

j. *Picture 8 GF*. This picture is for female subjects. Bellak thinks it is rarely useful, but (for females as a counterpart to Picture 8 BM) it may reflect the predominant worry, negative withdrawal or situation of conflict, or dreams for the future.

k. *Picture 13 MF*. According to Bellak, this picture brings out sexual

conflicts in both men and women. In very inhibited subjects, this may lead to a "sex shock" that finds expression in the stories. In males it may bring out guilt feelings about sex activity. Relationships between husband and wife may be projected and also themes of economic deprivation. Henry also takes this picture as a stimulus for illicit sex relations or of sex activity accompanied by guilt. The relation between sexual and aggressive feelings is also portrayed.

l. Picture 18 BM. The stimulus property of this picture helps in revealing fears of unknown forces. Bellak suggests that this picture exposes anxiety in males. Stories may also reflect need for support and describe help given, etc.

m. Picture 18 GF. This picture gives an idea about how aggression is handled by women. Common themes are denial of aggression or help being provided by women and, sometimes, mother-daughter conflict.

3. Administration Procedure

The procedure of administration consisted of making an appointment with the subject well in advance and administering the test individually at a place of mutual convenience both to the investigator and the subject. In preindustrial areas, the test was administered at the house of the village headman who fixed the appointment time for the tester. Standard instructions were given in the language of the subject and his or her stories were recorded verbatim. Behavior indexes were noted and, at the end, an inquiry was conducted.

C. RESULTS

In this section we reproduce and comment upon stories secured from persons in each of the two technologies.

Industrial Sample

This picture signifies a good and prosperous family. It seems a period of plenty for them. They are husband, wife, and daughter. Land is being tilled, the wife seems to be expecting. A sure sign of their prosperity is that the daughter is going to college, which many people cannot afford. The girl's face shows a faraway look for a bright future.

Preindustrial Sample

This is a hilly place where a man with his family is working in the field. They are working with the help of a horse. These people are from the villages and most probably are not educated. An educated girl seems to be watching their work and may also be telling them how to do it.

The most significant difference between these two stories, and between the contrasting elements of each pair of stories, is that the story from the industrial sample reflects one family, and the girl in the foreground is the central figure around whom the story is woven and that the story from the preindustrial group invariably makes that girl an alien person (e.g., one watching the people, a visitor, an instructoress) and seldom an educated daughter or daughter-in-law. At times, the stories from the industrial sample reflect a conflict in the family about the girl's desire to seek further education. A conflict between adherence to a traditionalistic family role and a possible revolt dominates the themes of the stories in the industrial group. Stories obtained from the preindustrial area evade this conflict by negating the girl's intimate relationship with other figures in the background.

The females from the urban-industrial area display a strong aspiration for higher education. There is no striking trend for the endings of the stories, but those with happy endings show the fulfillment of strivings. Others show revolt to family codes or forced compliance.

Industrial Sample (3 BM)

He seems to be a soldier. He was probably injured and captured by the enemies. He ran away from captivity and now he is somewhere on the way. He is tired and has "plunged" himself to rest awhile—some arm or pistol is lying. He will take refuge somewhere and will go to his place afterwards.

Preindustrial Sample (3 BM)

This man seems to be in a jungle. He is very distressed and is crying. He is feeling the loss of something. Probably some relative has died. In any case, he is feeling the loss of something.

Though both stories are realistic, the foremost difference is that, while the story from the industrial sample gives evidence of the presence of difficulties, it reflects a will to overcome those difficulties. The story from the preindustrial area reflects a tendency to succumb to difficulty. Mostly, the stories from the preindustrial area skip the instruction about the outcome. In the industrial sample, stories reflect a concern about problems like unemployment, loss of money, failure, etc. Stories from the preindustrial area reflect a vague notion of grief, but not anything specific that could be overcome by definite methods. In the preindustrial area, an acute depression is the theme of almost all the respondents who see the huddled figure as a female.

Industrial Sample (3 GF)

This lady seems to be in emotional turmoil and wanting to get out of the room or the place in which she has confronted this turmoil. This is

not only inflicted on her from outside, but also emanates from internal conflict. She is almost hopeless, but is trying to hold on to something physically as well as mentally.

Preindustrial Sample (3 GF)

This woman is hiding her face. She is most probably crying. She may have had a quarrel with her husband which has led her to cry. She seems to be standing near a gate.

Like Card 3 BM, Card 3 GF elicits depression stories. Stories from the preindustrial sample reflect mild grief from domestic quarrels, minor accidents, etc. Stories from the industrial area give evidence of more serious concern, like conflict, guilt, unhappy home, drunkard husband, unemployment, and the like. At times, the intensity of depression is so much that the stories have themes of suicidal tendency and reflect the presence of self-destructive elements. In the stories from the industrial sample, the central figure often challenges and attempts to meet the frustration. This theme does not appear in the stories from the preindustrial area.

Industrial Sample (4)

They are husband and wife. They seem to be sitting in some snack bar or annex where, after some talk or something, the husband misunderstood her and wanted to go away leaving her there. She is trying to make him understand. The cause of misunderstanding may be the wife's having a friend. The result will be that the man will go away, but later will realize his mistake and they will reconcile.

Preindustrial Sample (4)

The man is very angry and is ready to go somewhere. The wife is trying to hold him back from doing so. She thinks if she will not prevent him he will do something dangerous. She is also trying to make him understand.

To Card 4, there was a great deal of resistance. This resistance may indicate the presence of blocks and hindrances to the discussion of male-female relationships, the relationships that the picture is supposed to elicit. In general, in both samples the two figures are depicted as husband and wife. Themes of infidelity and extramarital relations are more common in stories from the industrial sample than they are in stories from the nonindustrial sample. Male subjects in the industrial area tend to see the woman as a temptress. Females in the preindustrial area tend to see her as a protector from evil. Stories from the preindustrial area often reflect aggression and emphasize the role of women as a sobering influence on the enraged man.

Industrial Sample (6 BM)

This picture shows a son and the mother. There is some difference of opinion. The son wants to marry a girl of his choice which his mother does not approve; so the quarrel is going on. But this man will marry the girl of his choice despite the wishes of his mother. She will feel very sorry and will be separated. The son will be disinherited.

Preindustrial Sample (6 BM)

They are mother and son. It seems that the father of the boy has died. He lives with his mother. The boy wants to marry according to his choice. The mother, because of the family tradition, does not want him to do so. She is, therefore, angry with the son and is feeling depressed. She is thinking that if his father were alive he would not have behaved in this manner. The son is also unhappy. He does not want his mother to be unhappy and yet would not concede to her wish.

In Picture 6 BM, the important question is the discussion of social change. In both of the foregoing stories, the hero resents interference on the part of the parents in the choice of a mate. But, in the stories from the industrial area, the hero shows courage to shatter tradition. In the stories from the pre-industrial area, the hero does not have an urge to revolt against the authority of the mother figure.

Industrial Sample (6 GF)

This shows a shocked state of the woman over what he suggested. He took her into his apartment. Seems to be a film director, and he made some advances. She is shocked. He had offered drink and a good night's rest. She is a girl with artistic leanings and she is looking for an opening for her talents. He is a "seasonal" type, but this girl is of high repute and character.

Preindustrial Sample (6 GF)

These two people are perhaps father and daughter. They are sitting together and talking. She seems not very interested in the talk.

Because of the relatively slight difference in ages, the man is not taken as a father by females in the industrial area. They take the man as a contemporary, though slightly senior in age, and attribute to him qualities like aggression and seduction. They consider him as a sympathetic listener or even as a black-mailer. Females in the preindustrial area take the male figure as a father, and their story themes vary from aggression to sympathy and emphasize the girl's role as a peacemaker.

Industrial Sample (7 BM)

Father and son seem to have a very good business. They have just heard that their company has suffered a huge loss. The news has shocked

them and they are very much worried and disturbed over this loss. But, of course, they will recover after some time. The father is suggesting that his son not be worried.

Preindustrial Sample (7 BM)

They are father and son. The old father is advising him or trying to make the son understand something. The son resents it. He is explaining about a certain marriage proposal, the son does not like it. He will agree, but he does not like it.

Picture 7 BM provides themes connected with father-son relationships and all its derivatives (in males) in the form of attitudes to male authority. In general, the authority of the father is less pronounced in stories given by subjects from the industrial area. The authority figure is taken as a benefactor, a consoler, and sympathetic person, rejoicing in his son's accomplishments. Respondents from the preindustrial area emphasize the role of the father as a strict disciplinarian, an autocrat, and a personality who cannot be disobeyed.

Industrial Sample (7 GF)

This cannot be a mother and daughter relationship. She has lost her father or brother. She has got a doll for consolation, an aunt or governess is trying to console her. She has a detached look and seems lost. She is alone in the world and cannot be consoled.

Preindustrial Sample (7 GF)

A small child is holding a doll in her hands. The mother is trying to talk to her. The girl is putting a hard and sullen expression on her face. She does not want to listen to her.

Picture 7 GF is supposed to reflect mother-daughter relationships. It appears to facilitate negative attitudes, as the girl is supposed to look off into the distance rather than at the "mother."

Females from the industrial area deny that the relationship may be an intimate one of a mother to a daughter. The negative attitudes are transferred to an aunt or to a governess or to any other strict female who is exploiting the absence of the mother. Females from the preindustrial area do not do this. They feel that the role of mother is strict. They do not like this, but this hostility is not expressed in overt behavior. According to them, only the child adopts a negativistic tendency.

Industrial Sample (8 BM)

Seems to me a child envisaging a bright future. He is an ambitious lad who wants to reach the highest mark of the medical profession: i.e., winning a Nobel prize. He will one day fulfill his ambition.

Preindustrial Sample (8 BM)

Two fellows are fighting. There are three persons, they can be dacoits, the third fellow is watching them. Two persons have tried to kill another, but they succeeded only in inflicting some injuries on him. The fourth fellow is trying to save him. The others are scared, as this fellow (if saved) will give evidence against them. The gun belongs to the fourth person.

For the most part, subjects from the industrial area give stories of ambition, as contrasted with stories of aggression given by subjects from the preindustrial area. In stories from the industrial region, glory attaching to the future is a striking characteristic. Stories from the preindustrial area are guilt-laden and show compulsive fear of punishment. In stories from the industrial area, ideas of social change are linked with the presence of the gun. No such idea pervades stories from the preindustrial area. The likely implication is that frustration and aggression are regarded as of group concern, as well as of individual concern, in an industrial area but are considered purely in personal terms in a preindustrial area.

Industrial Sample (13 MF)

This is a feeling of terrible conflict that the man has faced in course of his sexual relationship with the woman concerned. Either this is a case of unwilling partnership of man or he is feeling guilty for having done something to the woman. Meanwhile, the woman seems to be exhausted and sleeping. He is leaving the room (female).

This seems to be an undesirable state. The woman is criminally assaulted and the poor lady has committed suicide out of despair. The man is now repenting his wicked behavior and trying to make a vow that he will be a changed man after this calamity (male).

Preindustrial Sample (13 MF)

These are brother and sister. This sister is taken ill and her condition has deteriorated. The brother seems to be nervous. He is standing and thinking whether she will get well or not. The sister is lying unconscious (male).

A strange picture. The woman is murdered and the man is at a loss as to who has done this. He is thinking of the good old days they had together. He is feeling desperate at the moment. But when the shock is over he will marry again (female).

Picture 13 MF is meant essentially for disclosing sexual conflict. Out of all pictures used, Picture 4 and Picture 13 MF proved to be most difficult in terms of eliciting responses from the subjects. Subjects from the industrial area generally gave less inhibited stories than did subjects from the prein-

dustrial area. In females, the stories are about fear of being raped, attacked, murdered, etc., and about feelings of being rejected or frigid. In men, the stories are about the feeling of guilt about sex, about economic deprivation, and marital and heterosexual adjustment. Stories given by subjects in the preindustrial area are about brother-sister affection, economic deprivation, poverty, and illness.

Industrial Sample (18 BM)

This is a case of surprise attack on the person. The persons may be robbers or hostile to him. He has earned fame and enviable reputation which these people cannot stand and they have conspired against him. The hostility has taken a dirty turn and today when he is alone they want to kill him. Except for the timely help of police his life would have been finished.

Preindustrial Sample (18 BM)

This seems to be a blind man. He is taking the help of another person. He is holding him fast. He is invalid and walking with someone's help.

The themes of surprise attack, etc., are ignored by subjects from the preindustrial area and the stories are of something innocuous. Subjects from the industrial area tell stories of jealousy, aggression, monetary benefits, etc.

Industrial Sample (18 GF)

Staircase at the bottom. The act is of strangulation, the expression is of pathos and tragedy. It is not an act of support. Apparently strangulation, but it does not go with the expression. He may be an intruder who has come to commit theft or it may be someone known to her.

Preindustrial Sample (18 GF)

I cannot say whether these are men or women. Probably a woman holding somebody up who is ill. She is with great difficulty trying to move up the staircase.

In response to Picture 18 GF, subjects from the industrial area emphasize aggression which subjects from the preindustrial area tend to negate.

D. CONCLUSION

Our analysis of TAT stories suggests that the primary differences between the stories from the two areas are the way in which parental authority is perceived, the way in which interpersonal relationships are perceived, and the way in which family roles and relationships are perceived. The dimensions of security-insecurity, conformity-nonconformity, traditional-experimental, conventional-progressive, etc., vary between the two areas. Subjects from the in-

dustrial area are insecure, nonconformist, experimental, progressive. Subjects from the preindustrial area are secure, conformist, tradition bound, conventional, and resist change. The tension dimensions of the two areas vary in amount and quality.

E. SUMMARY

This paper summarizes part of a larger-scale investigation on the "Impact of technology on personality and values." Eight of Murray's TAT cards were used with 10 subjects. Five were from an industrial, urban, educated group and five were from a preindustrial, rural, uneducated group. The analysis of themes shows a difference in the perception of authority, in the nature of interpersonal relationships and family roles, and in the dimensions of security-insecurity, conformity-nonconformity, etc.

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BEHAVIOR IN CERTAIN ZERO-SUM, TWO-PERSON GAMES*¹

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A. INTRODUCTION

In the study of human social behavior it is frequently desirable to place certain restrictions upon the interaction situation to isolate what may be the effective conditions. This is usually done in three major ways: (a) the behaviors available to each person may be limited to a choice of one of several possible alternatives, (b) a limit may also be set on the amount of information available to any one person about the actions of other persons in the situation, or (c) the number of persons in the interaction situation may be restricted.

The game of strategy² provides a situation in which these three variables may be clearly defined: (a) the behaviors available to a player are limited to the number of alternative moves from which he may choose one move to be made on any particular play, (b) the information available to a player can be restricted to a knowledge of the move the other player made and whether or not the player won or lost on that play, and (c) the number of individuals in the interaction situation can be limited to two.

This report is concerned with behavior in that type of game. The two-person strategy game is a game in which an individual's wins or losses are determined by his own actions and the actions of the other player. A particular move may result in a win or a loss for the player, depending upon which move the other player makes. Because of this dependency, such games are analogous to partial-reinforcement situations in which a subject (*S*) is sometimes reinforced for making a particular response and other times is not reinforced for making the same response (7).

Many investigators (2, 3, 4, 5, 6) have found that when an *S* is faced

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² A game of strategy is a game in which the outcome does not depend purely on chance. Rather, the actions of the participants (that is, their strategies) contribute to the determination of the results of the game.

with a two-choice problem (one alternative being reinforced at one rate; the other, at another rate) he does not make his choices so as to gain the maximum possible number of positive reinforcements. Typically, *S* continues to choose an alternative that is reinforced at a low rate or even one that is not reinforced at all. He responds to each alternative at about the rate at which each alternative is reinforced. Similarly, in a game of strategy there are best solutions: that is, ways of proportioning one's moves over the course of the game to insure a maximum number of wins regardless of the manner in which the opponent proportions his moves. These optimum solutions have been developed from game theory (8) and are based upon the minimax principle. The solutions are general and optimum. They apply regardless of the strategy chosen by the opponent. These solutions provide a baseline for determining the deviations of *Ss* from rationality. As such, they enable study of the conditions that lead to more or less rational behavior in social situations and offer promise as anchors for experimental comparisons. For the present, however, this study is concerned only with the following problem: "Can the results obtained in partial-reinforcement experiments be generalized to the social setting of the game?"

B. METHOD

The games used in this experiment may be represented by two three-by-three matrices (see Figure 1). The three rows of each matrix are designated A, B,

	A'	B'	C'
A	+	+	-
B	-	-	+
C	-	-	-

3/9, 6/9

	A'	B'	C'
A	+	+	-
B	-	+	+
C	-	-	-

4/9, 5/9

FIGURE 1
TWO THREE-BY-THREE MATRICES REPRESENTING THE GAMES USED IN THIS EXPERIMENT

and C; the three columns, A', B', and C'. A plus sign in a cell of a matrix means that the row player wins one point and that the column player loses one point. A minus sign means that the row player loses one point and that the column player wins one point. The probability a player has of winning by

playing randomly on his three alternative moves against an opponent who is also playing randomly is the ratio of his winning cells to the total number of cells in the matrix. The matrices are designated by this probability: the probability that each player has of winning by playing randomly against a random opponent. Thus for the 3/9, 6/9 matrix, the row player has three winning cells out of the total of nine cells; and the column player has six winning cells. Similarly, in the 4/9, 5/9 matrix, the row player plays on a probability of 4/9, the column player plays on a probability of 5/9.³

The games are further designated as zero-sum, zero-value, two-person games. Zero sum refers to the restriction that the sum of the wins and losses of the players on a single play is zero. Zero value means that each player's wins and losses should average out to zero provided neither player plays badly on a series of plays.

1. Apparatus

Two *S*s were seated at either end of a 60" by 32" table, with *E* sitting at one side of the table between the *S*s. Each *S* faced a 34" by 20" Masonite panel that prevented him from seeing either *E* or the other *S*. These panels were recessed 15 inches from the ends of the table. *E*'s control board was between and at right angles to the *S*'s panels.

Three switches were mounted side by side on each *S*'s panel. One switch was designated "A," one "B," and one "C." To make a move in the game, *S* turned on one of these three switches. Three white lights were arranged in a column above the three switches. These lights were also designated "A," "B," and "C," respectively, and were the lights by which *S* was given the other player's move (OPM) on a particular play. An orange signal light was located on each *S*'s panel and was used to signal *S*s to make their moves by turning on one of their three switches. A slot was cut in each *S*'s panel, and through this slot he received his wins and losses in the form of poker chips (white chips for wins and red chips for losses). Each slot was covered by a trapdoor that prevented *S* from seeing into *E*'s compartment.

The three switches of each *S* were wired into nine lights on *E*'s control board. These nine lights were mounted in three rows and three columns forming a three-by-three matrix. Each of the three switches of one *S* controlled one of the three rows of the matrix, and the three switches of the other *S* controlled the three columns of the matrix. When each *S* made a play by turn-

³ The other possible 3/9, 6/9, and 4/9, 5/9 arrangements of cell values, and those of the remaining three-by-three matrices (1/9, 8/9, and 2/9, 7/9) were discarded as intrinsically uninteresting. In such matrices, there is always one player who, by making one move 100 per cent of the time, can win 100 per cent of the time.

ing on one of his switches, the light in a cell of the matrix that was located at the intersection of the row and column controlled by those switches was lighted. It was thus possible to light any one of the nine cells in the matrix with one of the nine possible combinations of the *Ss'* switches.⁴ By superimposing one of the game matrices (Figure 1) on these nine cells, *E* could pay off *Ss* according to the value of the lighted cell by sending poker chips to each *S* through the slot in his panel.

Before receiving his payoff, *S* was given OPM information on each play, by means of the OPM lights. These OPM lights were wired so that two different kinds of OPM information could be given to *S*. These were as follows:

a. OPM subject. *Ss* played each other. The OPM information that each *S* received corresponded to the actual play of the other *S*.

b. OPM experimenter. *Ss* played *E*, though under the impression of playing each other. *E's* OPM's were randomly ordered, predetermined ratios of "A," "B," and "C" moves.⁵ Payoffs under OPM experimenter were made to *S* on the basis of *S's* play and the experimenter's play. Two varieties of OPM experimenter were used: random OPM experimenter that consisted of an equal number of "A," "B," and "C" plays; and optimum OPM experimenter that was made up of "As," "Bs," and "Cs" in a ratio determined by the optimum solution of the probability condition on which *E* was playing. These optimum solutions were obtained by solving simultaneous equations for each of the probability conditions. For example, the optimum solution for the 3/9, 6/9 matrix (3/9 probability condition) was found as follows: The original three-by-three matrix was reduced to a two-by-two matrix by eliminating, first, the C row of the 3/9, 6/9 matrix (Figure 1). This could be done because an optimum 3/9 player would never play on this row since it contains no wins for him. Next, Columns A' and B' were considered as one because of their sameness. The original three-by-three matrix is now reduced to the two-by-two matrix shown in Figure 2.

Equations for this matrix may now be established. (a) $A - B = v$, (b) $-A + B = v$, and (c) $A + B = 1$. In these formulae, *A* = the proportion of plays on A, *B* = the proportion of plays on B, and *v* = the value of the game. Solving these simultaneous equations, one finds that $A = 1/2$, $B = 1/2$, and

⁴ By means of snap-on connections it was possible to control switch location on *S's* panel by making *S's* A Row Switch control the A, B, or C matrix row. This was done for the column player as well. Switch location was systematically controlled by means of three-by-three Latin squares.

⁵ The sequence of plays was based upon tables of random numbers in Edwards (1). The only restriction imposed was that the A, B, and C moves be in the desired ratios. No restrictions were placed upon the ratios within blocks of 30 trials or upon the sequence in which the plays occurred.

$v = 0$. The optimum solution, when playing on 3/9 probability, is to proportion one's moves randomly in the ratio of 1/2 A and 1/2 B. The optimum solutions for the other three probability conditions were obtained by the same

	A' & B'	C'
A	+	-
B	-	+

FIGURE 2

THE TWO-BY-TWO MATRIX DERIVED FROM THE 3/9, 6/9 MATRIX BY ELIMINATING ROW C AND COMBINING COLUMNS A' AND B'

procedure. The optimum solutions, along with the optimum OPM experimenter, for the four probability conditions, are as follows:

Probability condition 3/9: optimum solution for player—1/2 A, 1/2 B, 0 C; optimum solution for other player—1/4 A', 1/4 B', 1/2 C'.

Probability condition 4/9: optimum solution for player—1/2 A, 1/2 B, 0 C; optimum solution for other player—1/2 A', 0 B', 1/2 C'.

Probability condition 5/9: optimum solution for player—1/2 A', 0 B', 1/2 C'; optimum solution for other player—1/2 A, 1/2 B, 0 C.

Probability condition 6/9: optimum solution for player—1/4 A', 1/4 B', 1/2 C'; optimum solution for other player—1/2 A, 1/2 B, 0 C.

2. Experimental Conditions

Twelve experimental conditions were obtained by combining the four probability conditions of the two matrices with the three OPMs: subject, random, and optimum. These experimental conditions were as follows: S playing on 3/9 probability—(1) OPM subject, (2) OPM random experimenter, (3) OPM optimum experimenter; S playing on 4/9 probability—(4) OPM subject, (5) OPM random experimenter, (6) OPM optimum experimenter; S playing on 5/9 probability—(7) OPM subject, (8) OPM random experimenter, (9) OPM optimum experimenter; S playing on 6/9 probability—(10) OPM subject, (11) OPM random experimenter, and (12) OPM optimum experimenter.

⁶ Because A' and B' are equivalent, an equally satisfactory solution is 1/2 on either A' or B' and 1/2 on C'.

3. Subjects

Ss were volunteers from introductory-psychology courses. Nine Ss were used in each experimental condition. The total N was 108.

4. Procedure

Two Ss were seated at either end of the table and the following instructions for playing the game were read to them by E.

This is a game to be played by the two of you. The game works like this: each of you has a certain number of possible moves on each play. On each play you must select one of those moves and make it by turning on one of the switches, marked A, B, and C, on the board before you. When both of you have played, a device I have in front of me will tell me how much each of you wins or loses on each play. I will then pay you off in poker chips. White chips are wins and red chips are losses. Thus, you can keep a check on how well you are doing by the number of white and red chips you have. But there's a catch in the game: if one of you chooses Move A and the other chooses Move A you both may win or lose a certain amount, but if one of you chooses A and the other B you may both win or lose a different amount. So you see that winning or losing a given amount is dependent not only upon what you do, but also upon what the other player does too.

To help you play the game as well as you are able there is an arrangement to tell you the move the other player made on each play. After both of you have played I will turn on one of those three lights marked A, B, and C. That light will be the move the other player made.

So that you will both play at the same time I will turn on this orange signal light. When this light goes on you will turn on the switch you want to play and leave it on until the signal light is turned off.

In summary then, first the signal light will go on, next you will make your move by turning on the switch you want to play. Your wins or losses will be given to you in white or red chips and you will be given the other player's move from one of the three lights, either A, B, or C. Lastly the signal light will be turned off and you will then turn off your switch.

And remember, you may both win or both lose, or one win and the other lose on any given play and the object for each of you is to get as high a score in white chips as you possibly can.

Let's have a practice play. I will turn on the signal light, now each of you turn on Switch A. Now I'll turn on the light to tell you what play the other player made. You see Light A is on. Then, of course, you would be paid off. Next I turn off the signal light and you turn off your switch.

Do you have any questions?

All right, let's start the game.

Following the procedures specified in the instructions, the game was begun and continued for 150 plays.

C. RESULTS AND DISCUSSION

The data were organized into five blocks of 30 trials each and the report of results is based upon Ss' frequencies of responding to the three alternate moves within blocks of trials.

The results of the experiment will be discussed under the general headings of "optimum solution," "partial-reinforcement effects," and "the OPM effect," with particular reference to Figures 3 and 4. Performance of the Ss will be considered relative to the optimum solutions required in the several conditions.

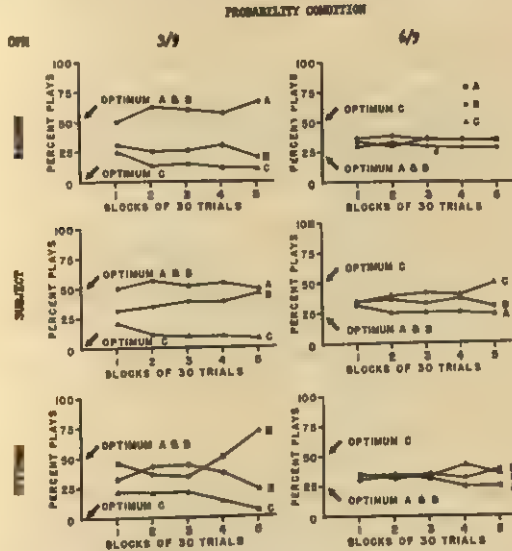


FIGURE 3
FREQUENCY OF RESPONSE TO THREE ALTERNATIVE MOVES UNDER TWO PROBABILITIES OF WINNING (3/9 AND 6/9) AND THREE OTHER-PLAYER-MOVE (OPM) CONDITIONS

1. Optimum Solution

The optimum solutions for the 12 conditions are indicated by arrows in Figures 3 and 4. It is evident that none of the groups of Ss achieved optimum solutions. However, under some conditions Ss deviate much more widely from optimum than they do under other conditions. It was stated earlier that

the optimum solutions were the most effective solutions possible when the next move of the opponent was unpredictable, as it was in this experiment. Why *Ss* did not go to the optimum solutions must be explained. Two factors provide answers that fit all cases: (a) rates of partial reinforcement and (b) the different OPMs received by *S* under the three OPM conditions.

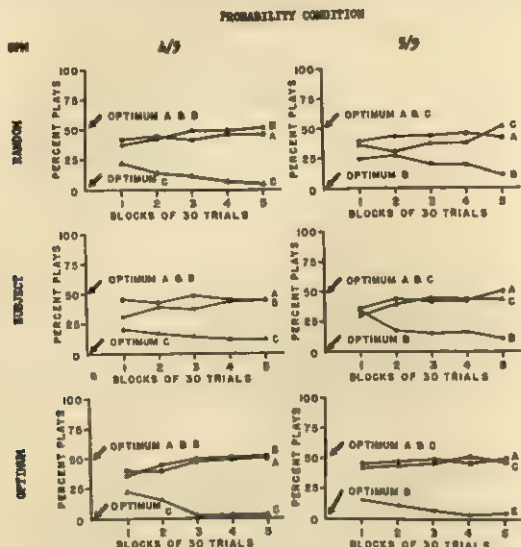


FIGURE 4

FREQUENCY OF RESPONSE TO THREE ALTERNATIVE MOVES UNDER TWO PROBABILITIES OF WINNING (4/9 AND 5/9) AND THREE OTHER-PLAYER-MOVE (OPM) CONDITIONS

2. Partial-Reinforcement Effects

a. *OPM random.* OPM random consisted of an equal number of moves, by *E*, on all three alternatives. Under this OPM condition, three of the probability conditions present a clear conflict between the optimum solutions required and the partial-reinforcement expectancies (3/9, 5/9, 6/9 conditions). In the fourth condition (4/9), the optimum solution and the partial-reinforcement expectancy coincide.

Ss playing on 3/9 probability should play at optimum in the ratio 1/2 A, 1/2 B, and 0 C. Under OPM random, *Ss* are positively reinforced at the rate 2/3 A, 1/3 B, and 0 C. Partial-reinforcement principles lead to the expectation that A will be played about twice as frequently as B, and that C will approach zero frequency since it is never positively reinforced. This

partial-reinforcement expectancy is obtained (see Figure 3, 3/9, OPM random).

Ss playing on 6/9 probability, OPM random, are reinforced at equal rates on all three response alternatives. Partial-reinforcement principles lead to the prediction that Ss will play with about equal frequency on all three moves. This occurs (see Figure 3, 6/9 probability, OPM random).

4/9 probability Ss receive equal positive reinforcement on A and B and are never reinforced positively on C. As would be predicted, A and B are played with equal frequency, while C tends toward zero (see Figure 4, 4/9 probability, OPM random).

Ss playing on 5/9 probability are reinforced positively 2/3 of the time on A' and C' and 1/3 of the time on B'. The previous partial-reinforcement expectation is that A' and C' will be played with about equal frequency, and that B' will be played about half as often as A' and C'. This is the case over the first four blocks of trials (120 trials). In the last block, B' is seen to be dropping out indicating that Ss may be tending toward the optimum solution for this condition (see Figure 4, 5/9 probability, OPM random).

b. OPM subject. The OPM-subject conditions present evidence that naive Ss, interacting with each other, will behave in accord with partial-reinforcement principles. Consider, first, Ss playing on the 4/9, 5/9 matrix. The 4/9 probability player continues to play C on which he never wins. This means that the 5/9 player occasionally will be reinforced positively for making his B' move. A rational operator playing at optimum would never play B' because its payoff rate is never as great as the payoff rate of A' and C'; but S, responding to partial reinforcement, would play B' at a rate proportional to the rate of partial reinforcement he receives on this move. Since the 4/9 player is playing C less frequently than a random player and more frequently than an optimum player, the partial-reinforcement expectation is that the 5/9 player, OPM subject, would play B' at a frequency intermediate between the 5/9 player, OPM optimum, and the 5/9 player, OPM random. Comparison of the 5/9 probability curves (Figure 4, 5/9 probability) reveals that this is, in fact, what occurs.

Additional evidence of the effects of partial reinforcement in an interaction situation between two naive Ss is provided by the 3/9, 6/9 matrix. Note that the 6/9 player is initially playing randomly, 1/3 of the time on each of his three moves (Figure 3, 6/9 probability, OPM subject). This means that the 3/9 player is being reinforced twice as often on A as he is on B (again, of course, he is never positively reinforced for playing C). In accord with

previous results on the effects of partial reinforcement, the 3/9 probability player plays about twice as frequently on A as he does on B at the beginning of the experiment. Note further that the 6/9 player reduces the rate of his A' and B' moves as the game progresses, at the same time increasing the rate of his C' responses. Accordingly, he is reducing the rate of reinforcement of the A move and increasing the rate of reinforcement of the B move of the 3/9 player. Now note that the 3/9 probability, OPM subject, player responds with a decreasing rate of plays on his A move and an increasing rate on his B move (Figure 3, 3/9 probability, OPM subject). Partial-reinforcement principles are seen to hold in a direct interaction situation between two naive Ss.

c. *OPM optimum.* For two probability conditions, 4/9 and 5/9, S approaches optimum when playing against an optimum player (Figure 4, 4/9 probability, OPM optimum, and 5/9 probability, OPM optimum). Whether they have achieved an optimum solution is in doubt however. The 4/9 probability, OPM optimum, Ss are reinforced at the rate of 1/2 A, 1/2 B, and 0 C. Partial-reinforcement expectations are that they would play A and B equally and that C would gradually drop out. The partial-reinforcement expectation and the optimum solution coincide. Similarly, the 5/9 probability, OPM optimum, Ss are reinforced at the rate 1/2 A', 0 B', and 1/2 C'. The partial-reinforcement expectancy again coincides with the optimum solution, *viz.*, that Ss play in the ratio 1/2 A', 0 B', and 1/2 C'. That the partial-reinforcement hypothesis is the more likely is indicated by the fact that in neither case does the nonreinforced response drop out completely as it should if Ss were playing rationally.

Ss playing on 3/9 probability, OPM optimum, would be expected on the basis of partial-reinforcement principles, to play at the rate of 1/2 A, 1/2 B, and 0 C. They clearly do not (Figure 3, 3/9 probability, OPM optimum). However, it appears that the increase in B moves over the last two blocks of trials can be accounted for in terms of partial reinforcement. It will be recalled that no restrictions, with the exceptions of randomness and proper ratio, were placed on OPM experimenter. As it turned out, because of this freedom from restrictions, E made the C' move 38 times out of the last 60 plays and A' and B' a total of 22 times under the OPM-optimum condition. In partial-reinforcement terms, this means that Ss are being positively reinforced at a much higher rate on their B move than on their A move during the last two blocks of trials and, because of this higher rate of reinforcement on their B move, they are making it more frequently than they are making their relatively less frequently reinforced A move. Again it will be noted that the

never-reinforced C move drops toward but never reaches zero, as would be expected from partial-reinforcement principles.

Ss playing on 6/9 probability, OPM optimum, seem to present a clear partial-reinforcement picture (Figure 3, 6/9 probability, OPM optimum). Partial-reinforcement rates were $1/4$ A', $1/4$ B' and $1/2$ C', and the partial-reinforcement expectancy was that Ss would play about equally on the three moves. Indeed, this seems to be the case. However, the data from individual Ss do not support this interpretation. For seven Ss, the frequency of play on either Move A' or Move B' is zero in the last block of 30 trials. These A' and B' moves, which dropped to zero frequency, were combined into the same curve (Figure 5). This was considered proper since the two moves were

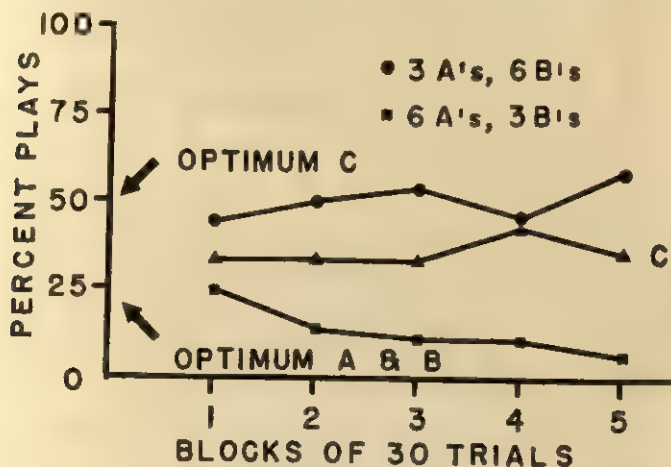


FIGURE 5
SUBJECTS PLAYING 6/9 PROBABILITY, OPM OPTIMUM. (A' AND B' MOVES THAT APPROACH ZERO FREQUENCY DURING THE FINAL BLOCK OF 30 TRIALS HAVE BEEN COMBINED IN THE BOTTOM CURVE)

equivalent. Now it may be observed (in Figure 5) that C' is being played at about the frequency expected on the basis of partial-reinforcement principles. Furthermore, one of the moves that received partial reinforcement is declining toward zero frequency (bottom curve), and the other curve rises above the C' curve. One possibility is that this reflects a recognition by S that the two moves A' and B' are equivalent, S merely makes the most economical choice of moves. But if this were the case it might be expected that the other 6/9 probability conditions, OPM subject and OPM random, would have produced Ss who dropped one of their equivalent moves. They did not. For an

explanation of this effect it is necessary to consider the effect of the OPM variable.

3. *The OPM Effect*

Among the 6/9 probability players, only those playing against OPM optimum dropped one or the other of two equivalent moves. Against neither OPM random nor OPM subject did this occur. It would seem, then, that there must be a critical difference between OPM optimum on the one hand and OPM random and OPM subject on the other hand. The difference is that, under OPM random and OPM subject, *S* receives information that the other player is making all three possible moves during the course of play; but under OPM optimum the other player (*E*) is making only two of the three possible moves during a game. The subject is imitating what (to him) are the actions of the other player whom he perceives as being in a situation similar to his own.

Subjects playing on one other probability condition lend support to this interpretation. The optimum solution for *Ss* playing on 4/9 probability is the same for all three OPM conditions, *viz.*, 1/2 A, 1/2 B, and 0 C. Furthermore, partial-reinforcement expectations for the C move are the same under all three OPM conditions since it never receives positive reinforcement. It is with the C move that we are particularly concerned. Note that it drops out much more rapidly in the OPM-optimum case than it does under either OPM random or OPM subject (Figure 4, 4/9 probability). Again the essential difference is that OPM optimum involves only two moves, A' and C', whereas OPM subject and OPM random involve three moves. Social imitation is influencing the actions of the *Ss* as they follow what appears to be the course of action of another person acting in a situation similar to their own.

D. SUMMARY AND CONCLUSIONS

The interaction process was examined in zero-sum, two-person games of strategy. It was found that behavior in games of strategy can be interpreted in terms of principles of partial reinforcement, but that a second factor called OPM (other player's move) is also operative. The behavior of *Ss* deviates from partial-reinforcement expectations in certain of the games and it was suggested that these deviations result from *S's* following the actions of the other individual with whom he interacts.

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PERCEPTUAL CORRELATES OF PREJUDICE: A STEREOSCOPIC-CONSTANCY EXPERIMENT*¹

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A. INTRODUCTION

Recent mention has been made of a stereoscopic-constancy phenomenon that has been designated "The Engel Effect" (3, 4, 5). To produce this phenomenon, two different portraits are presented by means of a stereoscope to the left eye and the right eye. At first, one portrait is brightly illuminated; the other remains in the dark.

Gradually, the dark portrait is brightened, and *S* is asked (after each increment of brightness) whether or not he notes any change in his percept. When the illumination of the two visual fields is equivalent, the portrait that initially had been illuminated is gradually darkened, and inquiry is repeated at each step of lowered brightness. The Engel Effect consists of the fact that *no phenomenal change may be reported anywhere in this sequence despite the fact that the observer starts by being exposed to one face and ends by being confronted with a different one.*

Ittelson and Seidenberg (5) noted this effect in two-thirds of their *Ss*, when stimulus faces of the same sex and race were presented to the left eye and the right eye. Ittelson and Seidenberg found that a recognition of change occurred when more dissimilar stereograms (male-female and Negro-Caucasian) were used. The difference in reactions to the more similar stereograms and to the less similar stereograms ". . . supports the rather obvious notion that the Engel Effect breaks down as the stimulus-pairs become more disparate (5)."

Because the stereoscopic perception of relatively *dissimilar* portraits results in an awareness of change *at some point* in the psychophysical sequence, one can inquire whether or not individual differences in this threshold can be related to attitudes toward stimulus content. For instance, does the extent

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¹ The first of the two studies reported is a summary of a thesis submitted by the senior author to Michigan State University in partial fulfillment of requirements for the M. A. degree in psychology. The second study was supported by a predoctoral research fellowship from the National Institute of Mental Health, U. S. Public Health Service, No. MPM 16, 194, to the senior author.

to which a person has adopted a masculine or a feminine role influence his perception of transition in the male-female stereogram? Is a high level of prejudice reflected in later or in earlier transmutation of the Caucasian-Negro stereogram? Ittelson and Seidenberg hypothesized the existence of threshold differences of the foregoing kind and indicated that the matter deserved further exploration (4).

Pettigrew, Allport, and Barnett (7) presented (in single exposures) bi-racial stereograms to prejudiced and nonprejudiced South Africans and reported as follows:

1. Afrikanders experience less binocular fusion and more binocular rivalry than do non-White South Africans.
2. Afrikanders tend to resolve Caucasian-Bantu slide pairs as either Caucasian or Bantu, rather than fusing them (into a "colored" or an "Indian" face).
3. When a stereogram is Colored-Indian, Afrikanders tend to see more "Bantu" or "Caucasian" faces than one expects by chance.

In the present study, we shall try to duplicate the foregoing findings in Ittelson and Seidenberg's "constancy" paradigm. We arranged to present Negro-Caucasian stereograms to prejudiced and nonprejudiced Ss and to raise and then lower the brightness of each face. We postulate threshold differences and we expect that prejudiced persons will have a relatively low tendency to "fuse" ethnically different faces in the transition from Face 1 to Face 2.

B. METHOD²

1. *Apparatus and Stimulus Material*

The apparatus used was an Engel stereoscope, which permits manipulation of the illumination levels independently for each eye. Portraits from student-identification cards were enlarged to provide the stereograms. To guard against recognition of the faces, cards five or more years old were used.³ All photographs were of males and were grouped in pairs, so that one photograph in each pair was of a Negro and the other was of a Caucasian. The major facial features of the two pictures stimulated roughly corresponding retinal points.

² The authors wish to thank Dr. S. Howard Bartley for providing Macbeth Illuminometer readings, and Dr. Irwin Kremen for helpful suggestions.

³ Engel (3) reports that in a few cases pictures that are recognized tend to dominate the visual field, and the characteristics of the so-called "binocular face" become mainly or wholly those of the person recognized.

2. Procedure

Students in introductory-psychology classes were given a Scale of Anti-Negro Prejudice. In our first (exploratory) experiments, a modified Adorno Ethnocentrism Scale, with subscales including the Anti-Negro Scale, was administered to 176 students (1). In a second experiment, a specially devised Anti-Negro Scale (in forced-choice format) was given to 232 students.⁴ In each case, the 25 students with the highest scores were assigned to the high-prejudice group; the 25 students with the lowest scores were assigned to the low-prejudice group. After a lapse of three to four weeks, *Ss* were individually contacted and asked to participate in an "experiment on vision." In the first study, 44 *Ss* were obtained (22 for each group). In the second study, 50 *Ss* were obtained (25 for each group).

In the experimental situation, each *S* was made familiar with the stereoscope. Then he was given the racially dissimilar stereograms, each one of which was carried through incremental changes in illumination. At the start of the series, the luminosity level was zero in the frame that was unilluminated and was 4.27 candles per square foot in the "fully illuminated" frame. In the first (exploratory) experiment, 10 steps brought the frame originally unilluminated to 4.27 candles per square foot, and another 10 steps brought the frame originally illuminated to zero illumination. In the second (main) experiment, six steps were used to bring the two frames to equal illumination (4.27 candles per square foot), and five more were used to bring the frame originally illuminated to zero illumination. In both studies, exposure time was held constant at two seconds.

To control for the effects of eye dominance, stereograms were randomized for each *S* with respect to each of the following features: stereogram presented first, order of stereograms thereafter, the eye that would receive illumination first, and whether the first portrait viewed would be that of a Caucasian or Negro (6).

Study No. 2 differed from Study No. 1 as follows:

1. In Study No. 2, two "fake" stereograms (featuring the same face to both eyes) were used to assess the effects of the *S*'s anticipatory set for perception of change.

2. In Study No. 2, randomization was restricted. At the start of each series, each *S* viewed four stereograms beginning with a Caucasian portrait and four beginning with a Negro portrait, and four beginning with the left eye and four beginning with the right eye. There were eight portraits in each series

⁴ Data on this scale will be presented in a subsequent paper.

and there were 10 series (counting the two "fake" slides). The random order for each *S* was determined independently of that for any other *S*. In Study No. 1, each *S* was presented with only five stereograms, alternated to control for eye dominance.

3. In Study No. 2, the scale used to separate *Ss* into the high-prejudice group and low-prejudice group was less subject to "faking good" than was that used in Study No. 1.

C. RESULTS

1. Study No. 1

We found no statistically significant perceptual differences between the high-prejudice group and the low-prejudice group. The number of *Ss* reporting fusion and the number of *Ss* reporting rivalry is identical in the two groups. There is a tendency for the high-prejudice group (as a group) to have more reports of rivalry than the low-prejudice group (52 *vs.* 37), but this difference cannot be tested statistically because many of the *Ss* did not report either fusion or rivalry.

All thresholds are lower for the low-prejudice group than for the high-prejudice group, but none of the differences is significant. Negro stereograms are found to be perceptually dominant. The Negro portrait is perceived earlier than the Caucasian portrait by both groups. For the low-prejudice group, $t = 1.963$ ($p < .05$ for a two-tailed test). For the high-prejudice group, $t = 2.674$ ($p < .01$ for a two-tailed test). There are no effects of order of presentation on point-of-threshold change; i.e., stereograms presented later in the series have neither elevated nor depressed thresholds, as compared with those presented earlier in the series. (Chi square for the contrast between Sets 1 and 2 *vs.* Sets 4 and 5 yields a $p > .20$.) Table 1 summarizes the findings.

TABLE 1
EARLIEST POINTS OF CHANGE REPORTED BY GROUPS

Change	Mean†		<i>p</i> *
	High-prejudice group	Low-prejudice group	
Rivalry-related	7.8	6.8	n.s.
Fusion-related	10.3	7.7	< .06
Complete dominance of the second target over the first	15.2	14.6	n.s.

* All tests are two-tailed, independent *t* tests.

† Means refer to step scale of illumination ranging from one to 20. One is the first presentation (second target unilluminated), 10.5 represents equal illumination of both targets, and 20 is the last presentation of the series (first target unilluminated).

2. Study No. 2

The results of Study No. 2 are substantially the same as those of Study No. 1. When a very liberal criterion of fusion-related change was used, it is found that the low-prejudice group gave more fusion reports than did the high-prejudice group ($t = 1.839$, $p < .05$ for a one-tailed test). Again, the Negro portraits are found to be perceptually dominant ($p < .01$ for a two-tailed test). There are no discernible effects attributable to the Ss' being set for perception of change. When the "fake" slides are viewed, the report typically is "No change," except for occasional, nonstimulus-related changes (e.g., "It looks closer now").

There is a slight (but nonsignificant) trend for the members of the high-prejudice group to have more reports of rivalry than is the case for members of the low-prejudice group and a (nonsignificant) tendency for the low-prejudice group to have more observations resulting in the complete Engel Effect (11 per cent of trials for the low-prejudice group and four per cent for the high-prejudice group).

In both studies, individual response styles are apparent, with some Ss tending to have consistently low or higher thresholds. Some Ss go through many intermediate changes prior to the dominance of the second stimulus field. Others do not.

D. DISCUSSION

Our most salient finding is the fact that results are less dramatic than those anticipated in the hypothesis. A general review of our data indicates that characteristics of the Engel Effect are at least partly responsible for this fact.

In the incomplete Engel Effect the typical sequence for most observers is as follows: First, the S tends to report "No change" until the level of illumination reaches a point at which minor intrusions of the second field are noted. At that point, the first field is at maximum brightness and the newly illuminated field is relatively dim.

The point at which the not-yet-perceived second object enters awareness (with elements of the old percept still present) usually occurs when the illumination of Field 2 considerably exceeds that of Field 1. In the case of our study, this result occurs with an average illumination of 2.46 candles per square foot for the old field and 4.27 candles per square foot for the new field. Prior to this point, the perceptual role of the incumbent field proves to be relatively small.

Complete dominance of the second field tends to occur almost at the very end of our series of exposures (with Field 1 illuminated by an average of only

0.34 candles per square foot). Up to that juncture, at least some elements of Field 1 tend to be represented in the percept.

At no point in the sequence do we find the usual result of stereoscopic observations with equivalent fields. There is relatively little routine rivalry or segregated superposition of objects or binocular fusion of the two images. If any of the three foregoing situations be labeled "AB," and if the situation in which the first target is exclusively or predominantly perceived be labeled "A" and that in which the second target is seen be labeled "B," it becomes possible to say that percepts reported by Ss tend to go from "A" to "B" without the intermediate step "AB."

Because our main hypothesis relates to relative perception of fusion and rivalry by prejudiced and nonprejudiced persons, the experimental situation in which we tested this assumption appears to be inappropriate. The same point holds for expected threshold differences because the late appearance of the second stimulus when the constancy effect operates makes it almost a mandatory function of structural predominance.

The relatively consistent trends (accounted for by some Ss) in differences of "fusion thresholds" between our two groups—which are consonant with our prediction—*imply a relationship between prejudice and perception in Ss whose perceptual response styles make such a relationship possible.*

This possibility raises the prospect of promise for future research into individual styles of response to the Engel Effect. In Ittelson and Seidenberg's study (5), individual styles are as much in evidence as in our experiments. Ardis and Fraser (2) found that extraverts maintain constancy effects better than do introverts, and other investigations have reported related findings linking perceptual responses and personality measures. It is thus possible that perceptual styles (with some Ss having consistently high or low thresholds and with some Ss going through many changes or few changes or no changes) are tied to personality variables, but may be subject to modification by social attitudes.

E. SUMMARY

In the two studies reported, we examine a hypothesized relationship between attitudes toward Negroes and a stereoscopic interracial-constancy effect. We find no statistically significant differences between the high-prejudice and low-prejudice groups in their readiness to perceive Caucasian and Negro faces. Trends observed in the data support previous findings that Ss high in prejudice tend to report more binocular rivalry and less binocular fusion when the stimulus material consists of biracial stereograms than do low-prejudiced Ss.

Because the constancy phenomenon evoked by the method of stimulus presentation works against the likelihood of reports of rivalry or fusion, our trends may assume greater proportions than one would otherwise assign to them.

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ATTITUDES TOWARD BLINDNESS AND OTHER PHYSICAL HANDICAPS*¹

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A. INTRODUCTION

If an individual has an attitude toward an object, there is the question of the generality of that attitude. The significance of an individual's devaluation of the Democratic party, for example, changes when we also know that he is against political parties in general. The problem is exemplified also in the relationship between attitudes toward blindness and toward other physical handicaps. Is blindness perceived as unique, so that it arouses attitudes and evaluations different from those aroused by other physical handicaps?

From a legal or from an organizational point of view, this seems to be the case. As Barker *et al.* point out, "No group among the physically handicapped in the United States has been so favored by special legislation as the 'legally blind'" (1, p. 273) and "No other groups concerned with the disabled appear to be as well organized and as well financed as the associations for the blind" (1, p. 275). This unique legal and organizational support may reflect a widespread perception of blindness as uniquely disabling. Certainly the anecdotal literature points in this direction. The research findings, however (though meager), do not support this conclusion. Probably the most extensive data on the question can be derived from Strong's study of the interests of 2,340 men (5). The reactions to "blind people" and to "cripples" were quite similar, with about one-quarter of the group "liking," about one-fifth "disliking," and 55 per cent "indifferent." Of course, the categories of liking and disliking may not be too pertinent because one may consider blindness as devastating and still "like" blind people. There is also the possibility that a dimensional approach to attitudes, as espoused for example by Kramer (2), may reveal that the comparative attitudes toward blindness and physical handicap depend upon the components studied.

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Three related experiments were performed. The essential idea of each one was to divide a group into two random sections so that one section responded to attitudinal items related to blindness while the other responded to similar items referring to physical handicap.

B. EXPERIMENT 1

The purpose of this experiment was to determine whether or not particular attitudinal components reveal differences in the way blindness and other physical handicaps are perceived.

1. Method

a. Subjects. Two sets of questionnaires were randomized among 97 first-year students at the New York School of Social Work. These students were recruited from the psychopathology classes attended by most of the full-time students. The questionnaires in the two sets were identical except that one set dealt with "blindness" or "blind people," while the questionnaires in the second set dealt with other "physical handicaps" or with "physically handicapped people." Two-thirds of the students ($N = 65$) received the Blindness Form, while the remaining one-third ($N = 32$) received the Physical Handicap Form. In both sections, 73 per cent were female. The median age of the section that received the Blindness Form was 29, with a range from 20 to 50 years (6, 7). The median age of the section that received the Physical Handicap Form was 27, with a range from 22 to 49 years.

b. Indices. For the section that received the Blindness Form, six indices were constructed: competence, emotional attributes, personal interaction, community integration, nonprotectiveness, and conception of blindness.

Two of the indices were constructed to reflect facets of the perceived personality characteristics of blind people: i.e., (*a*) their general ability to compete and exist independently in society (competence) and (*b*) their emotional adjustment and degree of happiness (emotional attributes).

Another broad area covered attitudes toward the integration of blind persons into the world of the sighted. For this purpose, three indices were designed: (*a*) personal interaction—to measure the degree of expressed readiness for personal interaction with blind people, (*b*) community integration—to tap the readiness for the integration of blind people into community activities of the sighted, and (*c*) nonprotectiveness—to appraise tendencies toward giving the blind person special consideration or toward displaying unusual sensitivity to the feelings of blind people.

A sixth index, conception of blindness, focused upon how seriously blind-

ness was viewed and the degree of tension or anxiety that blindness was perceived as engendering in one's self.

The item content, scoring procedure, reliabilities, and factorial analyses of these indices are described in a previous publication (7). A comparable set of six indices was constructed for the group receiving the Physical Handicap Questionnaire (the items referring, however, to "physical handicap" or "physically handicapped people" rather than to "blindness" or "blind people"). In addition, the subjects who received the Physical Handicap Questionnaire were asked "to describe what the term 'physically handicapped' suggests to you." The replies were mainly in terms of some motoric limitation or impairment. Defects of vision were generally not mentioned and (when cited) were never mentioned alone, but were coupled with other sensory defects as illustrative of the general idea of physical handicap.

c. *Statistical treatment.* The two groups were compared on each of the six attitudinal indices. The Kruskal-Wallis rank test (4) was used as a nonparametric measure of statistical significance.

2. Results and Discussion

Table 1 presents a comparison of the two groups with respect to the six

TABLE 1
COMPARISON ON SIX ATTITUDE INDICES* OF GROUPS RECEIVING
BLINDNESS AND PHYSICAL HANDICAP FORMS

Index	Blindness (<i>N</i> = 65)		Physical Handicap (<i>N</i> = 32)		<i>H</i>
	Mean	<i>SD</i>	Mean	<i>SD</i>	
Emotional attributes	21.02	4.24	19.89	3.53	ns
Competence	13.84	5.39	14.09	2.94	ns
Personal interaction	9.09	1.72	8.45	1.73	ns
Community interaction	7.03	2.24	7.50	2.12	ns
Nonprotectiveness	5.05	2.37	4.14	1.86	ns
Conception	11.35	3.77	13.91	3.99	< .01 ^a

* High score indicates nondevaluating or nonwithdrawal tendency.

^a Kruskal-Wallis *H* significant beyond the .05 level. ns = not significant at the .05 level.

attitudinal dimensions. Only one of the indices, "Conception," significantly differentiated between the two groups, with blindness assessed more severely than physical handicap.

Table 2 presents an analysis of the differences between the two groups with respect to their answers to the items in the conception index. All of the items

are in the direction of a more severe evaluation of blindness than of physical handicap, though only one of the five items is significantly differentiating: i.e., blindness (as compared to physical handicap) is more definitely perceived as among the worst of occurrences (Item 1). One implication of these findings is that there may be a distinction between the attitudes toward *blind people*

TABLE 2
COMPARISON ON CONCEPTION INDEX OF GROUPS RECEIVING
BLINDNESS AND PHYSICAL HANDICAP FORMS

Item ^a	Form given	
	Blindness (N = 65) %	Physical Handicap (N = 32) %
1. There aren't many things that are worse than being blind [physically handicapped].	51	28 ^b
2. I think that if I were blinded [physically handicapped] I could make a pretty good adjustment to being blind [handicapped].	42	59
3. If I were blinded [physically handicapped] the chances are I would spend a good many years feeling helpless and dependent on others.	29	19
4. If I were blind [physically handicapped] I doubt if I could ever be really happy.	26	9
5. The worst thing about blindness [physical handicap] is the attitudes of the sighted [nonhandicapped] toward the blind [physically handicapped] rather than the sheer loss of vision [rather than the handicap itself].	54	72

^a Words in brackets were substituted for "blind" or "blindness" in the Physical Handicap Questionnaire.

^b By chi-square test, difference significant beyond the .05 level.

and attitudes toward *blindness*. The conception index deals mainly with evaluations of blindness, as contrasted with the remaining indices that deal with reactions to blind people: i.e., with their perceived attributes or with a readiness to interact with them. If attitudes toward blindness are more severe than attitudes toward blind people, one would expect the conception index to be the most discriminating. Experiment 2 was designed to offer an explicit test of this hypothesis.

C. EXPERIMENT 2

In this experiment, the problem was to compare the evaluation of blindness with the evaluation of blind people. Osgood's semantic-differential technique (3) seemed suitable for this purpose, affording a means of fashioning a common metric for assessing attitudes toward blindness and toward blind people.

1. Method

a. Rating scales. Two rating-scale forms were prepared, a Blind People Form and a Blindness Form. The two forms contained similar sets of 27 paired antonyms (e.g., ugly-beautiful, fairness-unfairness).

In the Blind People Form, the pairs were presented as adjectives; but in the Blindness Form the pairs were presented as nouns (e.g., ugliness-beauty and strength-weakness instead of ugly-beautiful and strong-weak). This was done to help focus the attention of the respondent on connotations of blindness rather than on those of blind people.

On the rating sheets, the members of each pair of words were separated by a line divided into 11 equal intervals. To give his "idea of what characteristics are suggested to you by the phrase Blind People" (in the case of the Blind People Form) or to give his "idea of what blindness as a condition means or suggests to you" (in the case of the Blindness Form), the respondent was instructed to check the appropriate interval for each pair. Fourteen pairs were selected as items for a Favorable Evaluation Index. These 14 pairs were used because on a priori grounds, it was relatively easy to order each pair in terms of a favorable-unfavorable direction. Weights from one to 11 were assigned to each item, with 11 points designating that the respondent had checked on the space closest to the favorable member of the pair. An individual's score on the index was the sum of his 14 item scores. The 14 items of the Favorable Evaluation Index are listed in Table 3.

b. Subjects. The two forms were randomized within each of two classes of first-year students at the New York School of Social Work. These groups were not those that served in Experiment 1, as the administration took place one year after Experiment 1. The total number of subjects was 41, with 20 receiving the Blind People Form and 21 receiving the Blindness Form.

2. Results

Table 3 shows that the subjects receiving the Blind People Form scored significantly higher on the Favorable Evaluation Index, signifying a greater readiness to attribute negative evaluations when confronted by the stimulus "blindness" than by the stimulus "blind people." Item analysis of the Favorable Evaluation Index reveals that this negative-evaluation tendency with respect to "blindness" was fairly general, with 11 out of the 14 items showing differences between the two groups in the expected direction. Four of these 11 items showed significant differences. In none of the three items on which "blindness" was rated more favorably than "blind people" was the difference

TABLE 3
COMPARISON ON FAVORABLE EVALUATION INDEX AND ON INDIVIDUAL ITEMS
OF GROUPS REACTING TO BLINDNESS AND TO BLIND PEOPLE

Measure ^a	Attitude toward:				H ^b
	Blindness (N = 21)		Blind people (N = 20)		
	Mean	SD	Mean	SD	
Favorable evaluation index	63.05	11.62	74.35	9.13	< .05
Beautiful-ugly	5.57	1.42	5.35	1.03	ns
Fair-unfair	5.14	2.56	5.90	1.74	ns
Good-bad	4.38	2.66	6.30	2.51	< .001
Strong-weak	5.81	3.78	6.10	2.18	ns
Young-old	4.00	1.57	4.52	.71	ns
Pleasant-unpleasant	3.90	2.49	6.25	1.86	< .001
Light-dark	1.71	1.49	5.25	1.43	< .001
Rich-poor	4.86	1.65	4.05	1.53	ns
Clean-dirty	6.19	1.53	6.05	.61	ns
Happy-sad	2.86	.93	3.75	1.19	ns
Independent-dependent	3.19	2.18	4.35	2.83	ns
Secure-anxious	2.90	.97	4.20	2.24	< .05
Competent-incompetent	5.90	2.98	6.15	1.62	ns
Frank-deceitful	6.86	1.73	5.85	1.30	ns

^a The favorable member of each pair is presented first. On the rating forms, items with favorable beginning traits were randomized among those with unfavorable beginning traits. The higher the score in the table, the more favorable the rating.

^b Kruskal-Wallis test. ns = not significant at the .05 level.

significant. None of the 13 items *not* used in the Favorable Evaluation Index significantly differentiated the two groups.

Inspection of the significantly differentiating items shows that four concepts are particularly suggestive of "blindness" rather than of blind people: bad, unpleasantness, darkness, and anxiety.

D. EXPERIMENT 3

The preceding experiment delineated differences between evaluations of blindness and of blind people. That these differences would be found had been suggested by the results of Experiment 1. However, Experiment 1 (involving a comparison of attitudes toward blindness and physical handicap) had further implications. Perhaps orientations toward blindness are more severe than orientations toward physical handicap; hence the discriminating power (in Experiment 1) of the conception index. But perhaps there is little difference between evaluations of blind people as compared to evaluations of physically handicapped people; hence the failure of the remaining indices (in Experiment 1) to be discriminating, since they deal mainly with orientations toward people rather than toward physical handicap or toward blindness *per se*. The purpose of Experiment 3 was to put the preceding hypothesis to a direct test.

1. Method

a. Rating forms and experimental groups. Two rating-scale forms were prepared: a Blindness Form and a Physical Handicap Form. The two forms were randomized among a fresh sample of 39 social-work students recruited from two classes, with 20 students receiving the Blindness Form and 19 receiving the Physical Handicap Form. Each form was divided into two parts. The first part dealt with the disability (i.e., with "blindness" or "physical handicap," depending on the form). The second part of each form dealt with disabled people (i.e., with "blind people" or "physically handicapped people," depending on the form). The respondents were asked to rate the disability with respect to nine trait pairs and to rate handicapped people with respect to a different set of nine trait pairs. The 18 pairs are listed in Table 4. Respon-

TABLE 4
COMPARISON ON ITEMS RELATED TO EVALUATION OF DISABILITY AND OF DISABLED PEOPLE
OF GROUPS REACTING TO BLINDNESS AND TO PHYSICAL HANDICAP

Item ^a	Form given				<i>H</i> ^b
	Blindness (<i>N</i> = 20)		Physical Handicap (<i>N</i> = 19)		
	Mean	<i>SD</i>	Mean	<i>SD</i>	
<i>Disability</i>					
Fair-unfair	3.63	2.30	4.94	2.64	ns
Pleasant-unpleasant	2.15	1.14	2.95	2.17	ns
Gentle-brutal	6.32	2.73	6.00	2.84	ns
Easy to adjust to-					
hard to adjust to	2.45	1.54	3.06	1.63	ns
Lenient-severe	2.75	1.74	5.21	1.84	< .05
Beneficial-destructive	3.45	1.79	5.11	2.45	< .05
Good-evil	4.21	2.25	5.32	1.82	ns
Restricted to a few					
experiences-pervading					
most experiences	4.35	3.46	4.37	2.65	ns
Similar to many other					
experiences-a unique					
experience	2.50	2.61	4.05	2.91	< .05
<i>Disabled People</i>					
Self reliant-dependent	5.05	2.24	5.58	2.79	ns
Secure-anxious	3.70	1.97	3.95	2.01	ns
Competent-incompetent	6.05	2.41	7.05	1.68	ns
Ambitious-resigned	5.63	2.24	6.89	2.49	ns
Calm-excitable	5.26	2.02	5.44	1.15	ns
Friendly-hostile	5.84	2.29	5.58	1.22	ns
Happy-sad	4.26	1.97	4.63	1.38	ns
Active-passive	5.89	2.10	5.79	2.67	ns
Not easily offended-touchy	4.58	1.71	4.79	1.78	ns

^a See Note a of Table 3. The first seven items listed comprise the Disability Index.

^b Kruskal-Wallis test. ns = not significant at the .05 level.

dent ratings for each item were made on 11-point scales, as described for Experiment 2. A maximum of 11 points was assigned to each item, depending upon how close the selected interval was to the favorable member of the adjective.

b. Indices. Two types of indices were constructed: those dealing with the evaluation of the disability and those dealing with the evaluation of disabled people. The Disability Index included those items dealing with the disability, except for two items in which the favorable members were not as clear-cut as in the remaining ones: i.e., (*a*) restricted to a few experiences—pervading most experiences and (*b*) similar to many other experiences—a unique experience. All nine trait pairs referring to people were used in the Disabled People Index. An individual's score on an index was the sum of the seven or nine items relevant to the Disability Index and to the Disabled People Index respectively. For the Disability Index, the corrected odd-even reliability was .86 for the group that received the Blindness Form and .73 for the group that received the Physical Handicap Form. For the Disabled People Index, the reliabilities were .86 and .84.

2. Results

Table 5 presents the comparison of Blindness and Physical Handicap groups with respect to the evaluations of disability and disabled people. It can be

TABLE 5
COMPARISON ON THE DISABILITY INDEX AND ON THE DISABLED PEOPLE INDEX OF
GROUPS RECEIVING BLINDNESS AND PHYSICAL HANDICAP FORMS

Index	Form given				<i>H</i> ^a
	Blindness (<i>N</i> = 20)		Physical Handicap (<i>N</i> = 19)		
	Mean	<i>SD</i>	Mean	<i>SD</i>	
Disability	24.96	9.39	32.59	9.51	< .05
Disabled People	46.26	11.75	49.70	10.87	ns

^a Kruskal-Wallis test. ns = not significant at the .05 level.

seen that the evaluation of blindness is more severe than that of physical handicap in general, but that there is no significant difference between the evaluations of blind people and physically handicapped people.

Table 4 reveals that the devaluation of blindness is fairly general with regard to the items referring to disability. Thus six of the seven items are in the expected direction, though only two (blindness more destructive and blindness more severe) attain statistical significance. Two other items dealing with dis-

ability are in the expected direction, but were originally excluded from the disability index as being less clear in their evaluatory nature. Thus, blindness is also seen as more pervasive and more unique than physical handicap, with the uniqueness difference reaching statistical significance. Considering the three most differentiating items, we see that blindness (relative to physical handicap in general) is evaluated as a unique, severe, and destructive condition. Though admittedly "blindness" is rated along different dimensions than "blind people" and therefore the two sets of ratings are not strictly comparable, it is suggestive of the results of Experiment 2 that in general "blindness" is rated more severely than "blind people." Thus six of the nine ratings of "blindness" listed in Table 5 are more negative than the most negative rating of "blind people."

However, there are some common trends in reactions to blindness and physical handicap. By and large, the more favorably "blindness" is seen with respect to a particular dimension, the more favorably "physical handicap" is perceived. And, as objects to be rated, similar considerations hold for "blind people" and "physically handicapped people." Computed from Table 5, the Spearman rank-difference correlation between the means of the Blindness and the Physical Handicap groups (with respect to the seven items of the Disability Index) is .75; while the correlation with respect to the nine items of the Disabled People Index is .90. Both groups rate their respective disabilities toward the "unpleasant" and "hard-to-adjust-to" end of the trait continua and also rate the people possessing their respective disabilities as anxious and sad; but slightly on the active, ambitious, and competent sides of these three rating dimensions. In both the Blindness and the Physical Handicap groups, the disability is rated lowest on the pleasant-unpleasant dimension (2.15 and 2.95 respectively), and disabled people are rated most highly on the competent-incompetent dimension (6.05 and 7.05 respectively).

E. DISCUSSION

There may be two factors determining the patterning of responses in the various experiments: first, the nature of the disability; second, the fact that it is an individual who has the disability. In situations in which the nature of the disability is kept constant or controlled (but in which the attitudinal objects differ in the degree to which they make reference to people), it is the people-oriented object that gets the more favorable reaction. In Experiment 2, when the disability was restricted to blindness, "blind people" were perceived more favorably than "blindness." In Experiment 3, when the nature of the

disability was blindness, "blind people" received relatively high ratings on coping traits, such as competence and activity (despite ratings of "blindness" as unpleasant and difficult to adjust to). Similar results were obtained for the group in which physical handicap was presented as the disability.

On the other hand, when there is limited reference to people, the nature of the disability becomes salient. Thus, in Experiment 1 blindness was more severely evaluated than physical handicap and, in Experiment 3 was seen as more severe, destructive, and unique than physical handicap.

Finally, in a context in which there is reference to people, a differential response to a particular type of handicap is attenuated. In Experiment 3, there was no significant difference between evaluations of physically handicapped people and blind people, thus the fact of individual differences may enter the picture to minimize the differential nature of the disability as a predominant force.

Several questions arise. First, "Are we dealing with a response set, a tendency (conscious or unconscious) *not* to say "bad things" about people as compared to the disability?" Or, speaking mentalistically, "Is the image, the perception itself, genuinely different in the case of handicapped people as compared to the handicap itself?" A careful introspective study should throw some light on this question. However, there is the more general and testable implication that reactions to an attribute may be different from reactions to the individuals having an attribute. One possibility is that the reaction to people having a given attribute more effectively conjures up new and modifying characteristics that are not suggested by the attribute itself. "Piety" may suggest goodness and holiness, but "pious people" may suggest other and less valued characteristics (e.g., hypocrisy, sanctimoniousness). "Sickness" may suggest death, infectiousness, and pain; but "sick people" may suggest courage and the ability to withstand pain. Indeed, a major function of abstractions, such as "blindness" and "piety," may be the stripping away of the auxiliary connotations and the focusing of attention upon the concept *per se*.

Second, "Is the more severe reaction to blindness as compared to physical handicap due to the relative generality of the latter term as compared to the specificity of the former?" Control studies in which specific physical handicaps would be compared to blindness and to the general category of physical handicap are required to answer this question. It seems likely that particularly severe disability (e.g., complete paralysis) would yield more negative images than either blindness or physical handicap in general.

Third, there is the question of the generalizability of the findings beyond a social-work student population. It is possible that the more favorable reaction

to people is limited to groups or persons who (vocationally or personally) are "toward" people or are sensitized to the importance of individual differences or are on their guard against negative evaluations of people, when based on the limited information transmitted in the single quality of being blind or physically handicapped.

F. SUMMARY

This paper deals with a comparison of attitudes toward blindness and toward other physical handicaps. Three experiments were performed on separate samples of social-work students. In each experiment, two comparable questionnaire forms differing in the object to be assessed were randomized among the students. Reactions to "blindness" were compared with reactions to "blind people" and to "physical handicap" and reactions to "blind people" were compared with those to "physically handicapped people." Blindness is seen as more uniquely destructive than other physical handicaps, even though evaluations of the traits of blind and physically handicapped people are similar. Also comparable associations to "blindness" are more severe than those to "blind people."

The results are discussed with respect to the degree to which the attitudinal objects focus on the nature of the disability relative to their focus upon the individual having the disability.

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THE EFFECTS OF VERBAL REINFORCEMENT ON CONFORMITY AND DEVIANT BEHAVIOR*¹

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A. INTRODUCTION

There are a number of factors that influence conforming behavior. These include (a) the stimulus variables used to elicit the conforming behavior; (b) group properties: i.e., group structure and function; and (c) individual differences or personality factors. A fourth phenomenon related to both (a) and (b), yet operating as a factor in its own right, is (d) the situational factor or the conditions under which conforming behavior occurs.

Conformity is not a general factor that occurs indiscriminately, but is partially determined by the situational context in which it occurs. If, in a group situation, the individual is reinforced for conforming; his conforming behavior will increase. If he is reinforced for being deviant, his conforming behavior will decrease. As Oliver and Alexander state, "... conforming responses are seen as voluntary behavior whose occurrence is under the control of reinforcing stimuli that follow them, and discriminative stimuli or cues that precede them" (17, p. 3). They go on to say that "In social interaction, the behaviors of individuals or groups may serve as reinforcing stimuli, or they may serve as discriminative stimuli" (17, p. 3).

Conforming behavior can be manipulated like any other class of behavior (21). It is an instrumental act that leads to need satisfaction and goal attainment, with reinforcement playing a crucial role in the need → instrumental act → goal, behavioral sequence (21). If conforming behavior is followed by positive reinforcement the probability of its reoccurrence is increased; if deviation from a group norm is followed by positive reinforcements the probability of nonconformity is increased. Reinforcement is an important force in shaping (i.e., in forming and altering) social behavior, including conformity.

In a conformity situation there are a number of sources of social reinforcement, including the individuals comprising the group and the experimenter

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(*E*). Crutchfield (9), for example, had *E* inform the *S*s of the correct answers (i.e., the false group consensus) to various items immediately after the responses to each slide. The reinforcement by *E* (an authority figure) in conjunction with the group consensus increased the degree of conformity. Schein (18) found that reward facilitated learned imitation, but that this did not generalize to all types of problems. Jones, Wells, and Torrey (14) found that feedback by *E* in terms of group consensus had little or no effect on conformity, but that feedback in terms of objective reality reduced conforming behavior. However, when *E* stressed the importance of group accuracy and social conformity, feedback by *E* in terms of group consensus increased conforming behavior; and reinforcement by *E* of independence still reduced conformity but to a lesser extent.

The present study was designed to study the effects on conforming behavior of feedback by *E*. The proposition tested was that verbal reinforcement for agreeing with a contrived group consensus increases conformity, while reinforcement for disagreeing increases deviant behavior (i.e., decreases conformity).

Furthermore, because a number of investigators (1, 3, 5, 9, 19) have found that females conform more frequently than males, sex differences in conforming behavior were also examined. Bass (4) attempts to explain these differences in terms of motivational orientation, stating that men are more task-oriented while women are more social-interaction oriented. Because women are more concerned than men with receiving social approval from other individuals, women tend to conform more.

As a side issue, the present study also investigated the effects of the type of stimulus on conforming behavior. There are at least two dimensions to the stimulus factor: (*a*) ambiguity and (*b*) personal commitment. Luchins (16), Asch (2), Blake, Helson, and Mouton (7), and Endler (10) have shown that the more ambiguous the stimulus the greater proportion of *S*s conforming to the objectively incorrect judgment of the confederates. Crutchfield (9) found that conformity is least common for items involving personal commitment, such as personal preferences and attitudes.

In the present study, three types of stimulus items were used: verbal (obscure facts), perceptual (geometrical forms), and attitudes. Because the obscure facts (verbal items) would be most ambiguous for *S*, and because the attitude items involve personal or emotional commitment, we would expect most conformity to the verbal items, least conformity to the attitude items, and an intermediate degree of conformity to the perceptual items.

This study deals primarily with the effects of the situational factor on con-

formity (reinforcement) and secondarily with the effects of individual differences (sex) and stimulus factors.

B. METHOD

1. Subjects

Forty male and 35 female college freshmen were randomly assigned to one of three experimental conditions: conformity reinforcement (CR), 14 males and 12 females; neutral (N), 12 males and 10 females; and deviancy reinforcement (DR), 14 males and 13 females. There were three approximately equal groups of males; and three, of females.

Three male college sophomores served as confederates, and *E* (*Ss'* psychology instructor) served as the source of verbal reinforcement. The three confederates had prestige value in that one was the president of the students' council and was majoring in psychology, a second was editor of the student periodical, and the third was majoring in psychology.

2. Procedure

Each *S* was tested separately by *E*, but in the presence of the three male confederates. A series of 36 slides, consisting of 20 critical (conformity) items and 16 buffer items was used to measure conforming behavior. The 20 critical items, which were of the multiple-choice type, included eight information (verbal), nine perceptual, and three attitude items. The series of slides was programmed so that after the first three buffer items there were never more than two consecutive buffer items or two consecutive critical items. Slide Numbers 4, 5, 7, 8, 10, 12, 13, 15, 17, 18, 20, 22, 23, 25, 27, 28, 30, 32, 33, and 35 served as the critical items. Base rates in responding to these items were determined by administering them to a control group.

The 36 two-inch by two-inch slides were projected (one at a time) on a screen six feet in front of the respondents. The confederates and *S* were seated behind tables, and each individual had a pencil and a data recording sheet on which to record his answers. *E* projected the slide on to the screen and then told each individual when to respond. Each individual was required to announce his response. For the buffer or neutral items, *E* randomized the order in which the individuals responded. For each critical item, *S* was required to respond after hearing the responses of the three confederates. Previously, the confederates had been instructed how to respond to the critical items. The conformity score for each *S* was the number of times he agreed with the contrived consensus of the confederates on the critical items.

Ss were randomly assigned to one of three experimental conditions: conformity reinforcement (CR), neutral (N), and deviancy reinforcement (DR). Ss in the CR group were verbally reinforced by *E* saying, "Good, that is right," every time they *agreed* with the contrived consensus of the confederates on the critical items. Ss in the DR group were similarly reinforced by *E* every time they *disagreed* with the confederates on the critical items. Ss in the N group were not explicitly reinforced by *E*. Nothing was said after the buffer items, nor did the confederates at any time comment on an S's responses. The independent variable was the experimental treatment; the dependent variable was the S's conformity score.

C. RESULTS

To test the hypotheses of differences in conforming behavior due to experimental conditions and sex, the data were analyzed by means of a two-way (conditions-by-sex) analysis of variance with unequal *N*s (12 pp. 234-245). Table 1 shows that the observed differences among the several subclasses are significant ($p < .01$) indicating that at least one of the components (experimental conditions, sex, or interaction) is significant. Therefore, specific tests of the hypotheses concerning conditions, sex, and interaction

TABLE 1
TWO-WAY (EXPERIMENTAL CONDITIONS* BY SEX) ANALYSIS OF VARIANCE OF
CONFORMITY SCORES (FOR UNEQUAL *N*s)

Source	Sum of squares	<i>df</i>	Mean square	<i>F</i>	<i>p</i>
Experimental conditions	375.69	2	187.85	15.56	< .01
Sex	14.88	1	14.88	1.23	
Interaction	16.53	2	8.26	.68	
Among subclasses	407.10	5	81.42	6.75	< .01
Within subclasses	833.03	69	12.07		
Total	1240.13	74			

* The experimental conditions are conformity reinforcement (CR), neutral (N), and deviancy reinforcement (DR).

were made, and the analysis of variance for this also appears in Table 1. The only significant factor is that among conditions CR, N, and DR ($F = 15.56$, $p < .01$). There are no significant sex or interaction differences. Since there were no significant sex differences, the male and female samples were combined, and Tukey's gap tests (20) for comparing means in the analysis of variance reveal that Ss in the CR group conformed significantly more ($p < .01$) than those in the N group, who conformed significantly more ($p < .01$) than those

in the DR group. Table 2 contains the means and standard deviations for the various subgroups.

To test the hypothesis that the verbal items elicit the greatest degree of conformity, that attitude items elicit the least degree of conformity, and that the perceptual (geometrical) items elicit an intermediate degree of conformity, the Jonckheere distribution (13)—free k-sample test against ordered alternatives—was performed for the CR, N, and DR conditions separately, yielding Z values of 3.64, 6.94, and 12.08 respectively ($p < .01$).

TABLE 2
MEANS AND STANDARD DEVIATIONS OF CONFORMITY SCORES FOR MALE, FEMALE,
AND COMBINED SAMPLES UNDER THREE EXPERIMENTAL CONDITIONS

Sample	Experimental conditions						Deviancy reinforcement		
	Conformity reinforcement			Neutral					
	<i>N</i>	<i>M</i>	<i>S.D.</i>	<i>N</i>	<i>M</i>	<i>S.D.</i>	<i>N</i>	<i>M</i>	<i>S.D.</i>
Male	14	10.43	3.79	12	6.17	3.08	14	4.14	1.96
Female	12	8.25	3.27	10	6.20	4.85	13	3.62	2.17
Combined	26	9.42	3.72	22	6.18	3.99	27	3.89	2.08

D. DISCUSSION

The results indicate that verbal reinforcement for *agreeing* with a contrived group consensus increases the degree of conforming behavior. Similarly, reinforcement for *disagreeing* with a contrived group consensus decreases the degree of conformity (i.e., increases deviant behavior).

Verbal reinforcement is a potent force in shaping social behavior, often more potent than the objective state of affairs. From an early age, when a child is undergoing the socialization process, he is rewarded for imitating others and is often punished for attempting to be different: e.g., for not listening to his parents. Much of the individual's behavior (as he goes through grade school, high school, and college) is similarly shaped by reward and punishment. Likewise, the individual's behavior outside of classes is shaped by reward and punishment. Campbell (8) has pointed out that the more an individual is rewarded for nonconformity, the less often he will conform; and the more he is punished for nonconformity, the more he will conform.

In the experimental conformity situation the individual is faced with a discrepancy between the confederates' responses and what he knows or believes to be true. This discrepancy induces a conflict or a state of cognitive dissonance for S (11). (Another potential source of dissonance is between what a person privately believes to be true and what he publicly expresses.) The in-

dividual can reduce his dissonance via rationalizing: i.e., by redefining the situation and conforming.

In the neutral (N) situation, there are only two sets of opposing forces: the responses required by the stimulus materials and the responses required by the group pressure. For the Conformity-reinforcement (CR) and Deviancy-reinforcement (DR) groups, a third force is present: the reinforcing responses of the experimenter.

In the CR Group, the group pressures summate or interact with the pressures created by *E*'s verbal reinforcement for conforming; and this tends to maximize conformity pressure and produce the greatest amount of conforming behavior. In the DR Group, the group conformity pressures oppose those created by *E*'s verbal reinforcement for disagreeing with the group. Furthermore, in this case, *E*'s reinforcements are congruent with what *S* believes to be the objective state of affairs. This tends to minimize conformity pressure and produce the least amount of conforming behavior. In the N Group, there is no reinforcement from *E*. The only pressures to conform come from the confederates, and the only pressures to deviate come from *S* himself. There is still conforming behavior because *S*, in his previous life history, has been reinforced for conforming and punished for nonconformity. However, the conforming behavior is less than that for the CR Group, but greater than that for the DR Group.

Sex differences in conforming behavior did not occur. Most other investigators (3, 9) have found that females conform more than males do. However, in most of these cases the sex of the *S* has been the same as that of the confederates. In this present study, all the confederates were males while there were both male and female *S*s. It is possible that females conform less to male confederates than they do to female confederates. This may be because they identify more with other females and are more concerned with receiving social approval from females as a group than from males as a group. The presence of male confederates, therefore, may have reduced the conforming behavior of the females to the conformity level of the males.

In terms of the amount of conforming behavior, the type of stimulus material was also a factor. For all three experimental groups (CR, N, and DR), there was the greatest amount of conformity to the verbal items; the least amount, to the attitude items; and an intermediate amount, to the perceptual (geometrical) items. The verbal items were composed primarily of obscure facts, and *S* was not expected to know or be able immediately to verify the correct answers. Therefore *S*, presumably, would be willing to conform to the answers of the confederates who had both prestige value and more educational

experience than Ss. Since individuals have a strong emotional or personal commitment to their attitudes, these would be most resistant to change and, for these items, pressure would produce the least amount of conforming behavior. Since Ss, presumably, could verify the perceptual items via visual inspection these items would also be resistant to change. However, S would have no strong personal or emotional commitment to these items and, therefore, would be more likely to conform to these than to the attitude items. The results of the relative effects of the different kinds of stimuli on conforming behavior can be considered only as exploratory since there were only eight verbal, nine perceptual, and three attitude items.

In general, conformity is found to be greatest when Ss are verbally reinforced (by *E*) for agreeing with a contrived group consensus and is least when Ss are reinforced for disagreeing with the group. It is intermediate when Ss are not reinforced by *E*. There were no sex differences in conformity, but the type of stimulus material affects the amount of conforming behavior.

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THE RELATION OF ORDER OF RECALL TO VARIOUS MEASURES OF AFFECT*

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A. INTRODUCTION

In clinical psychology, many diagnosticians feel that the order of recall has some particular significance, but they do not know how to interpret it. For example, many clinicians would probably agree that the statement "I live with my mother and father" differs subtly in meaning from the statement "I live with my father and mother." Although they might agree that there is a difference in meaning, it would probably be difficult to get them to agree on what this difference signifies.

The question to be explored is essentially this: If an individual recalls the names of the members of any group in a given order, how does this order of recall relate to the intensity of affectional ties toward the members of that group? However, before the order relationships can be examined, the relationship between the two variables, affect and memory, should be analyzed.

In his book *Emotions and Memory*, Rapaport summarized Freud's writings in this area and some of their effects.

In the "Psychopathology of everyday life" Freud analyzed certain phenomena of forgetting and of substitution of other material for the forgotten memories and actions; he showed that the forgotten which he analyzed was related to ideas significant and personally painful to the subject. Although his formulations were rather cautious, they nevertheless admitted of misunderstandings. Thus many investigators equated the Freudian *unconscious* motive for forgetting with conscious "unpleasantness" at large. The Freudian theory was regarded by many as conceiving that every "unpleasant" idea or experience is subject to repression; the Freudian "pleasure principle" was interpreted as teaching the facilitated recall of "pleasant experiences" (6, p. 42).

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In addition, Rapaport summarized another theory relating affect and memory, the "pleasure-pain theory of learning."

This theory was originated by Spencer and elaborated by Bain. Spencer defined pleasure as "a feeling we seek to bring into consciousness," and taught as a consequence that pleasant experiences are recalled frequently and unpleasant ones are forgotten. This theory has generally influenced educational psychology and inspired Thorndike's "law of effect," according to which an experience followed by a satisfying state is "stamped in" and one followed by an annoying state is "stamped out" (6, p. 42).

The early studies in this area were summarized by Meltzer (4) and Gilbert (1). These studies, though relatively inadequate, tend to support the hypothesis of selectivity in memory.

Watson and Hartmann (8) and other writers (3, 5, 10) seem to agree (a) that more affective material is recalled better than less affective material, and (b) that material that supports attitudes is remembered better than material that opposes them.

If the preceding results were generalized to predict the order of recall, one would hypothesize (a) that the object (or person) that one is most emotionally involved with would be remembered first and (b) that, of those being recalled, the order of recall would be more dependent upon the favorable attitudes than upon unfavorable attitudes. To this writer's knowledge, there has been no study that deals with these hypotheses.

B. FIRST STUDY

1. *Subjects*

The sample consisted of all the girls residing in one wing of a women's dormitory. Of the 33 girls in the wing, only one was unable to participate in the study. The remaining 32 girls ranged in age from 17 to 21, with approximately equal distribution from 17 to 20 and only one subject of voting age. The distribution of academic status did not correspond to the distribution of age, since over half of the group were freshmen. Of the remaining subjects, six were sophomores, six were juniors, and two were seniors.

Although just over one-third of the students listed their home state as California, the remaining students were fairly representative of the various areas of the United States.

2. *Method*

The members of a women's dormitory were chosen as subjects for several reasons. First, it provided a fairly large sample of people who would have

ample and equal opportunity to interact and form affectional relationships.² Second, previous studies (2, 9) have demonstrated that the relationship between affect and memory is more pronounced with females than with males. Finally, the ruling that all out-of-town girls under 23 years of age must live in university-supervised facilities insured a more broadly representative group than would be found (for example) in a sorority house.³

The subjects were tested as a group in their own dormitory rooms to reduce the "proximity" effect to a minimum. The "proximity" effect refers to the fact that when a person is asked to recall a certain class of objects, any object in the specified category that is in the immediate environment tends to be recalled first.

The subjects were told that they would perform three short tasks. The first task involved the naming of as many objects in a given category as they could within 30 seconds. This time period was intentionally made short to prevent the suppression of names as they were recalled. Abbreviations (i.e., nicknames) were allowed. The subjects were told that the 30-second period would start as soon as the category was given. The category used for this experiment was "the names of the girls living in this wing." After the 30 seconds were over, the subjects were asked to write the complete name after their original entries.

In scoring, the experimenter (after eliminating the names of roommates to control for the proximity effect) gave weighted scores to the first five names according to their order of recall.

The second task was a "filler" task, used in an attempt to make the first and third tasks relatively independent. The "filler" task involved a 20-item multiple-choice test on famous women. Each of the five alternatives for every item consisted of a woman's complete name, thus 100 names were used in the "filler" test.

The third task involved a sociometric rating in which the subjects were asked to "list *in order* the five members of this group that you like *most* (excluding roommates)" and to "list *in order* the five members of this group that you like *least* (excluding roommates)." In the same manner as the first task, these ratings were given weighted scores.

From these weighted scores, each person was given a like score (i.e., the sum of all like-most scores for that individual), a dislike score (i.e., the sum of all like-least scores for that individual), and a total emotional-involvement

² The girls had been living together for about three months.

³ Since the sororities are unable to house all of their out-of-town members in their respective houses, approximately 25 per cent of this sample consisted of sorority girls. Approximately 20 per cent of the student body at The University of Arizona are members of Greek organizations.

score (i.e., the sum of all scores for that individual). These and the recall scores (i.e., the sum of the weighted scores from the first task for each individual) were ranked within the group, and rank-difference correlations were used to estimate the relationships between these ranks.

3. Results

Because five students did not follow instructions, the ratings they made and their recall data were omitted. However, the weighted scores given them by the other members of the group were used.

Out of the six possible correlations, only four have any meaning. The correlation between like and dislike ranks, as would be predicted, is negative ($r = -.39$, $p < .05$). The correlation of like ranks with the recall ranks is .55 ($p < .01$), while the correlation between total emotional involvement and recall is .52 ($p < .01$). However, the correlation between recall and dislike ranks is nonsignificant ($r = .17$).

4. Conclusions

The assumption of a "proximity" effect was borne out by the results. Over 60 per cent of the roommates were recalled either first or second.⁴ To support further the assumption of the "proximity" effect, it should be noted that many girls named themselves first.

The order of recall is significantly related both to the order of total emotional involvement and to the order of liking. In other words, one can say that the person with whom one is most emotionally involved or whom one likes most in a group tends to be recalled before the other members of that group. Therefore, if a person says "I live with my mother and father," one can infer that the greater emotional involvement or the greater positive affect tends to be connected with the mother. However, because the relationship between the order of recall and the order of disliking is nonsignificant, no inference can be made (for example) that the father is disliked.

The preceding inferences should be made with caution for several reasons:

1. Ranked data are relatively crude, giving only a relative position in the group (i.e., extreme affect ranks do not necessarily mean that the person is extremely liked or disliked).
2. The correlations are far from perfect, indicating that other factors influence the order of recall.
3. Both the sociometric ratings and the memory measures were based on a

⁴ Each girl had two roommates.

recall technique. Their intercorrelation may be spuriously high because of this common recall factor.

4. This relationship, found with females, might not be found with males or mixed groups.

5. Finally, the "filler" test may not have accomplished its intended purpose of keeping the recall data and the sociometric data independent.

Although nothing can be done to correct the first criticism, a second study was done in an attempt to correct or explore the remaining shortcomings.

C. SECOND STUDY

1. *Subjects*

The subjects were 22 males and eight females in a group engaged in a short term, intense training program at The University of Arizona. The trainees lived together, two per room, in one wing of a large motel and had been trained together for two months. They had just completed a two-week break in training before the data were collected.

The age range for the group was from 19 to 29, with the mean and median ages being between 22 and 23. All of the trainees were single, except for two members who were married (to each other). The group was also bi-racial, having two Negro trainees, one male and one female. (The Negro trainees were not the married couple.) The trainees, as a whole, represented all major geographical areas of the continental United States.

2. *Method*

On the day that the trainees returned from their training break, they were informed that they were to participate in a research study the following evening. The trainees met in a language laboratory so arranged as to prevent the trainees from seeing each other, at least when they were performing the recall task. Although the trainees were able to note who was sitting around them before the test started, the situation was designed to control the proximity factor by seating the subjects in individual cubicles.

The trainees were assigned seats randomly and given instructions as follows:

You have been assembled here this evening to help carry out a study having to do with . . . [your] training. . . . This study is concerned with your ability to remember things quickly. . . . You will be asked to name as many objects as you can in a category which I will designate. You will be given 30 seconds to write down the names of these objects. You do not need to use the full name of the object, but may use nicknames, abbreviations, and other shortened versions. . . . You are to

write down the names of as many objects as you can in the designated category within 30 seconds. The 30-second period will start as soon as I name the category. The category is the names of the persons in this . . . training group. *Go!* I repeat, the names of the persons in this . . . training group. . . .

Stop! . . . Now please print the full names, as well as you know them, to the right of the . . . names you remembered. When you have finished, turn your forms over and wait for further instructions. . . .

If you used any method or pattern in arriving at or remembering these names, describe it on the back of your form. If you are not aware of using any pattern or method, write the word "none" on the back of your form.

The second part of the study was conducted about 40 hours later by an independent experimenter, Dr. Peter Madison, a psychologist for the project. Dr. Madison had tested and interviewed all of the trainees on many previous occasions. In this part of the study, while using a list of all the group members, the trainees listed in order those members who were liked most and those who were liked least (i.e., disliked) and also provided six other similar but more specific sociometric ratings. These last six ratings had been secured once before about six months earlier.

The scores for each individual (i.e., recall, like, dislike, and total emotional involvement) were determined by the method used in the first experiment. Each trainee was ranked within the group on each of the four variables from his or her scores. Rank-difference correlations were used to study the relationships between these variables.

3. Results

The correlation between like and dislike ranks is negative ($r = -.74$, $p < .01$). The correlation of like ranks with recall ranks is .55 ($p < .01$), while the correlation between dislike and recall ranks is nonsignificant ($r = -.32$). These findings support the results of the first study. However, unlike the first study, the correlation between recall ranks and total emotional-involvement ranks is nonsignificant ($r = .03$).

In addition to these correlations, the effect of proximity was investigated. The proportion of ratings in which a person was chosen by (a) someone sitting in an adjacent seat during testing, (b) a roommate, or (c) the combination of a roommate or an occupant of an adjacent room are not significantly different from chance. Although each member of the married couple recalled each other among the first few names, both indicated on their data sheets that they were not including their spouses on the sociometric ratings.

About 50 per cent of the trainees reported that they noticed no pattern in

their recall responses. Of those who noted some pattern or partial pattern, seven used extended or recent contacts (e.g., just talked to the person before the recall task, spent the two-week break with the person named), six used some position variable (i.e., those mentioned in the preceding paragraph), five mentioned using similarity in the sound of the names, three noted that they remembered friends, two used sex (i.e., once a girl's name was recalled, the other girls' names were recalled), and one used the alphabet as a pattern (i.e., tried to remember the names alphabetically). Both members of the married couple and the two Negro trainees were recalled one after the other by only two subjects. The recall data for the married couple, each member of which recalled himself immediately after he recalled his spouse, were corrected by deleting these self and reciprocal choices.

4. *Conclusions and Discussion*

The preceding results confirm the findings that there is a relationship between the order of recall and liking, as reported in the first study ($r = .55$ for both), but fail to support the relationship previously found between the order of recall and total emotional involvement.

The different results for total emotional involvement may be accounted for by the fact that in the first study there was a clique in the group. This clique tended to like themselves and to dislike the other members of the group, while the rest of the group tended to dislike clique members and to like themselves. In the second study, all trainees tended to view each individual in approximately the same way because of the lack of any real clique. These differences in group structure are reflected in the like and dislike correlations in these two cases: $-.39$ and $-.74$ respectively. Since these two variables are negatively related, their combination into the total emotional-involvement score tends more strongly to cancel out the contribution of each in the case of the homogeneous training group than in the case of the clique-structured dormitory group.

Although the correlation between the order of recall and disliking tends to be in the opposite direction in this study ($r = -.32$) as compared to that in the previous study ($r = .17$), neither is significantly different from chance at the .05 level. Two possible explanations could account for the lack of any relationship between these two variables. First, some of the subjects may have been repressing names during the recall task (or the sociometric ratings in the first study). Second, if dislikes are formed early the disliked person is avoided. If the lack of contact is great enough the degree of dislike will lessen, leaving little or no correlation with the order of recall. On the other hand, liking a

person tends to lead to further contact, and therefore to a greater correspondence between the amount of positive affect and the order of recall.

In contrast to the first study, a list of names of all the group members was provided for the sociometric ratings; thus the contaminating effect of recall on these ratings was minimized.

The present findings support the assumption that other factors affect the order of recall, since the correlation between the order of recall and liking is far from perfect. These factors are noted in the results. The extended contacts and friendship patterns seem to be included in the relationship between the order of recall and liking. Even though other patterns are noted, they seem to influence relatively few individuals and only partially affect the order of recall for these individuals.

It should also be noted that both studies were based on groups that have no formal status hierarchy. Possibly differential status may play some role in the order of recall.

Since the second study makes use of a co-ed group, in contrast to the female group in the first study, one can feel confident in generalizing to male, female, or mixed groups.

Finally, in place of the "filler" test used in the first study, the two parts of the procedure were administered at different times and places by different persons, thus assuring control of common factors associated with a particular time, place, and person. The fact that the trainees, who normally felt free to ask any question about procedure during the training period, did not ask any questions about the relationship between the recall task and their sociometric ratings suggests that they did not associate the two procedures in any way.

D. SUMMARY

Thirty-two students from a wing of a women's dormitory were enlisted as subjects in a study that attempted to relate the order of recall to various measures of affect. The subjects were told that they would be asked to name as many "objects" in a certain category as they could within a 30-second period. In this study, the "objects" were "the names of the girls on this wing." After a "filler" task, the girls were asked to list in order the five girls they liked most and the five girls they liked least.

The author hypothesized (*a*) that those who were highly rated as to total emotional involvement would tend to be recalled first and (*b*) that the order of recall would be found to have a greater relationship with the order of liking than with the order of disliking. However, because of some deficiencies in

the design of this study, a second study was done using a training group of 22 males and eight females. Changes in procedure were made to correct or explore the shortcomings of the first study. An order-of-recall task and a sociometric-rating task (both similar to those in the first study) were given about 40 hours apart in different places and by different experimenters.

For both studies, the rank-difference method was used to correlate (a) order of recall and order of liking, (b) order of recall and order of disliking, (c) order of recall and order of total emotional involvement, and (d) order of liking and order of disliking. The coefficients for the second study were .55, —.32, .03, and —.74 respectively. These were compared to similar coefficients from the first study: .55, .17, .52, and —.39 respectively. Coefficients of .32 or less are not significant for either study at the .05 level.

The results of the second study support the previously found relationship between order of recall and liking, but fail to support the relationship between order of recall and total emotional involvement that was found in the first study. The contradictory findings concerning the latter relationship were explained in terms of the differences in social structure of the two groups and the method used to compute the total emotional-involvement score.

Since positive affect does not show a perfect or near-perfect relationship with the pattern of recall, an attempt was made to look for other variables that might affect the recall pattern.

The author feels that the consistent findings in these studies can be generalized to the members of any group (i.e., male, female, or co-ed) that does not have a formal status hierarchy.

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COGNITIVE COMPLEXITY AND THE INTEGRATION OF CONFLICTING INFORMATION IN WRITTEN IMPRESSIONS*¹

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A. THE PROBLEM

When *Ss* are presented with conflicting information about a stimulus person, the impressions that they form are diverse, both in content and in structure (3, 5). To account partially for this diversity, an attempt is made in the present study to relate a cognitive aspect of the *S* (complexity) to the manner in which he forms an impression of a stimulus person described by conflicting personality traits.

Cognitive complexity is a construct that refers to the variety of interpersonal concepts that *S* has available to describe other people. Complexity, then, is a structural variable that delineates a quantitative aspect of cognitive organization. Operationally, complexity can be defined by tallying the number of interpersonal traits *S* uses in describing a number of people fitting various roles, such as "a well-liked teacher," or "a disliked female," and so on.

In an investigation relevant to the present study, Mayo and Crockett (4) have reported that high complexity is associated with the amount of "ambivalence" *S* maintains toward a certain stimulus person who has been described in conflicting terms. This finding is based primarily on the fact that, on an adjective checklist, high-complex *Ss* indicated that both positive and negative traits characterized the stimulus person; on the other hand, low-complex *Ss* tended to check either all positive or all negative traits to indicate their impressions. The present investigation is an attempt to go beyond Mayo and Crockett's findings by examining the written impressions (rather than checklist behavior) of high-complex and low-complex *Ss*, so that we may answer the following questions: (a) Do high-complex and low-complex *Ss* utilize conflicting information in qualitatively different ways? and, if so, (b) What

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is the functional relation of complexity to the utilization of conflicting information in the person-perception processes?

B. PROCEDURE

Ss for the experiment were 36 paid volunteers, all of whom were enrolled in the 1960 summer session of Springfield College. Sixteen of the Ss were female; 20 were males.

Ss were presented with six stimulus traits said to be characteristic of a young college graduate. The six traits were pessimistic, intelligent, competitive, sensitive, kind, and self-centered. (The traits were selected from a larger set used in a previous pilot study in which it was found that each trait in the present subset was in conflict with at least one other trait in the subset.) Before the traits were read, Ss were instructed to form a complete and rounded impression. In addition, Ss were given a "transmitting set" (6) by being told that their impressions would be given to students in another college to see what impressions came across. The traits were read slowly in three different orders, and Ss were given two minutes to think them over and to round out their impressions. They were then given five minutes to write a complete description of the stimulus person.

Subsequently, the written impressions were coded into one of four categories:

1. Integration-superordination: characterized by attempts to deal with conflicting traits by utilizing a concept or trait which subordinated and explained the conflict and, in doing so, yielded a consistent impression of the person.

2. Integration-successive superordination: in this mode of impression formation, conflicting traits were dealt with, but the *S* did not subordinate them to a single concept. Rather, sets of conflicting traits were rationalized successively.

3. Unintegrated-onesided emphasis: characterized by an inclusion of either positive or negative traits, but not both. There was no attempt to deal with traits in conflict.

4. Unintegrated-aggregation: descriptions in which *S* listed both positive and negative traits, but made no attempt to reconcile and to integrate them.

For purposes of analysis, the four categories were collapsed into two: integrated (the first two categories, into which 20 Ss fell) and unintegrated (the last two categories, containing 16 Ss). Two judges agreed in assigning all but three of the 36 Ss to these two major categories; the assignment of these cases to the integrated or unintegrated category was reached by discussion and mutual agreement.

The measure of cognitive complexity was obtained from a questionnaire, a modification of that used by Mayo and Crockett (4). On the face sheet of the questionnaire, *Ss* were asked to think of eight different acquaintances, one in each of the following role categories: (a) a disliked male teacher or employer, (b) an older man who set the highest ethical standards, (c) a well-liked male the same age as the *S*, (d) a generally-disliked male the same age as the *S*, (e) a disliked female teacher or employer, (f) a well-liked female teacher or employer, (g) a well-liked female the same age as the *S*, and (h) a generally-disliked female the same age as the *S*.

Ss were instructed to write identifying initials beside each role category and to spend a few minutes looking over the list of names, comparing and contrasting the habits, beliefs, and mannerisms of these eight individuals. Following this, *Ss* were given three minutes to describe each person's habits, beliefs, ways of treating others, mannerisms, and similar attributes "so that a stranger might be able to determine the kind of person he is."

Two measures of cognitive complexity were obtained from these descriptions: (a) the number of qualitatively different interpersonal concepts that *S* used in the eight descriptions (hereafter referred to as "type"), and (b) the total number of concepts that *S* used, including repeated use of the same concepts in different descriptions (to be referred to as "token"). The product-moment correlation between the two measures was $+ .920$.

C. RESULTS

The two measures of cognitive complexity are associated with the integrated-unintegrated dichotomy of the written impressions. The direction of the correlation indicates that *Ss* high in complexity tend to form integrated impressions, while *Ss* low in complexity are likely to write unintegrated impressions: the point-biserial correlation is .309 for type ($.10 > p > .05$) and .358 for token ($.05 > p > .01$). The multiple correlation of the two complexity measures and the integrated-unintegrated dichotomy is not substantially larger than the token correlation ($R = .361$, $p < .05$).

For the purpose of experimental control, it is desirable to know if the conflict that *S* perceives among the stimulus traits is related to the manner in which he forms his impression. Thus, during the experimental sessions, *Ss* were asked to rate the likelihood of each of all possible pairs ($N = 36$) of the stimulus traits co-occurring within the same person. These ratings were made on an 11-point scale. The "unlikely to co-occur" side of the scale was linearly weighted, so that the magnitude of conflict between each pair of traits could be estimated. Summing over all 36 pairs yields a magnitude-conflict

score for each *S* for the entire set of traits. This rough measure of the subjective conflict between the stimulus traits is significantly correlated neither with the integrated-unintegrated dichotomy nor with the complexity measures. Thus, there is no evidence to indicate that the correlation between complexity and the integrated-unintegrated dichotomy is a function of the perceived conflict among the stimulus traits.

D. DISCUSSION

We have shown that there are individual differences in the manner in which *Ss* form impressions of a stimulus person described by conflicting information: some *Ss* integrate the conflict while others are unable to do so. We have also shown that cognitive complexity is related to this ability to integrate conflicting information. In order to understand these findings, let us consider dissonance theory (1, 2). Let us assume that, in some way, our *Ss* were motivated to reduce dissonance arising from conflicting stimulus information. By definition, *Ss* high in cognitive complexity have more interpersonal traits available in their response repertoire than do *Ss* low in complexity. From the viewpoint of probability, then, we expect that the *S* with a high degree of complexity, in his repertoire of interpersonal concepts, is likely to have traits that will rationalize conflict and enable him to reduce dissonance while retaining the initially conflicting traits in his description. On the other hand, the *S* low in complexity is less likely to have such traits available; consequently, either (a) he reduces the dissonance by distorting the information he receives, deleting one set of the conflicting traits and giving a one-sided picture of the stimulus person, or (b) his inability to reconcile the dissonant stimulus traits results in his simply recording the six stimulus traits without attempting to explain their joint occurrence in the same person. Thus, by considering cognitive complexity within the framework of dissonance theory, we are able to provide a clear and parsimonious account of the manner in which *Ss* form impressions of a person described by conflicting information.

E. SUMMARY

This paper reports an investigation of the relationship between cognitive complexity and the manner in which *Ss*, from conflicting information, form impressions of a person. It was found that *Ss* with a high degree of complexity integrate conflicting information into a unified impression, while *Ss* low in complexity form univalent or unintegrated impressions. These individual differences in impression formation are explained by a consideration of complexity within the framework of dissonance theory.

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THE QUEST FOR SUBJECTIVE CERTAINTY*¹

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*"Certitude is not the test for certainty. We have been
cocksure of many things that were not so."*

JUSTICE OLIVER WENDELL HOLMES

A. INTRODUCTION

For over two decades, behavioral scientists have been concerned with the study of relationships between various social and political attitudes and with the relationships between such attitudes and individual personality.

It did not take long to establish the fact that a person's attitudes are not isolated from one another, but combine to form consistent patterns and configurations of attitudes that emerge as political or social ideologies or as systems of values. As such they provide consistent frames of reference that play crucial roles in cognition and perception. Our insight into the way systems of values and attitudes motivate selective cognition is based upon findings by A. L. Edwards. Edwards has demonstrated that "... Recognition of material which harmonized with frames of reference of subjects is significantly better than the recognition of material which conflicted with the same frame of reference. Furthermore, the amount recognized was directly related to the degree of harmony of the material with respect to the frame of reference (2).

Edwards found that the high degree of interrelationship of attitudes and values provides a whole of such consistency that it serves as a stable frame of reference that orients cognitive factors, such as memory. This conclusion suggests the existence of a relationship between such interrelated attitudes and values and the personality as a whole. We are here concerned with the prob-

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¹ This paper was delivered originally before pedagogic seminars in Koblenz and Neuwied under the title "Das Beduerfnis nach Pseudoklarheit als Motiv zum Hass." Since then this paper has been published under the title "Das Bedürfnis nach subjektiver Gewissheit" by the *Koelner Zeitschrift fuer Soziologie und Sozialpsychologie*, 1963, 15, 511-528. The change in title from "The Need for Pseudo-clarity" to "The Need for Subjective Certainty" was proposed by Professor Benjamin N. Nelson who also made other helpful suggestions.

lem of formulating a conceptual scheme designed to advance the study of the relationship between personality and attitude configurations.

About the same time that Edwards did his work, the psychologist Eric Fromm published his classic *Escape from Freedom* (3). In this book, Fromm discusses the type of person who wishes to escape from freedom and responsibility in order to submit to a magic helper of unlimited authority. Before the publication of his book, Fromm had delivered a series of lectures that prompted Maslow in 1943 to conduct clinical studies that he described in an article on "The authoritarian character structure" (7). From his clinical studies, Maslow established the following characteristics for individuals whom he labeled as "authoritarian": The world is viewed as a frightening place, a jungle, where a strong protector or superior strength is needed for survival since norms are without validity; a great deal of hatred is projected upon the outside world, accompanied by the need for a scape goat—any scape goat; ("only hatred for a scape goat is constant here, not the choice of the scape goat"). Kindness is perceived as weakness. Incapacity to experience satisfaction is combined with pronounced sadomasochism.

On the basis of Fromm's analysis of Hitler's *Mein Kampf* (4), Maslow suggests the addition of still more characteristics: perception of an abyss separating men and women; homosexual tendencies; idealization of the role of the soldier; antagonism to providing education for those labeled "inferior"; pronounced tendencies to avoid responsibility for one's own fate; eagerness to give up one's own independence to some stronger protector; achievement of pseudosecurity through compulsive routine, order, discipline, fixity, and other compulsive-obsessive mechanisms.

Soon after the publication of Maslow's article, a team of behavioral scientists began their research at the University of California on the relationship of anti-Semitism to other attitudes and on the relationship of the constellation of such related attitudes to personality. The qualities that Maslow had proposed as characteristic of the "authoritarian character structure" provided the undertaking with a fruitful starting point. In the course of their work, the researchers were able to bring a large measure of order into the welter of characteristics enumerated by Maslow and to reduce the number of characteristics to a manageable figure. (*It is one of the objectives of this paper to propose a further simplification and consolidation: All the characteristics of the "authoritarian personality" follow from and are thus subordinated to "intolerance of ambiguity"; the "intolerance of ambiguity," in turn, is motivated by a "quest for subjective certainty."*)

The following attitudes were found to be closely related to anti-Semitism

as well as to one another: ethnocentrism, political and economic conservatism, and a set of expressed preferences that combined to provide the measure its authors called the F Scale because it labeled an attitude designated at first as "fascist." All these attitudes were found to be fairly characteristic of a personality designated as "authoritarian." Along with evidence for its validity, the F Scale was published in 1950 under the title *The Authoritarian Personality* (1). Since then the Fascism Scale or F Scale has also become known as the authoritarian-personality scale.

B. A PROPOSAL FOR RECONCEPTUALIZATION

The shift from "fascist personality" to "authoritarian personality" involved a most disturbing leap from the particular to the general. The resulting conceptual confusion has been dealt with by Edward A. Shils in his article "Authoritarianism: 'Right' and 'Left'" (9) and by Milton Rokeach, who proposes to replace the F Scale of Fascist Authoritarianism by a D Scale of General Dogmatism (8). In spite of the conceptual confusion of right-wing authoritarianism with authoritarianism-in-general, the concept of the "authoritarian personality" has proved an invaluable instrument in studies of the relationships of attitudes to personality. In their turn, these studies have contributed significantly to our understanding of the relationship of latent motivations to manifest behavior.

Studies of anti-Semitism have indicated that those intolerant of Jews are usually intolerant of members of other outgroups. Furthermore, the intolerant have been characterized, among other things, by marked tendencies toward meticulous orderliness, a need to perceive everything in black-and-white dichotomies, a need for definiteness that expresses itself in intolerance for ambiguity, and a desire either to submit to or to exercise unrestrained powerful authority. Among the characteristics of anti-Semites, the following stand out and may be considered to encompass the others: An intolerance for ambiguity and the desire to submit to or to exercise unrestrained powerful authority that are characteristic of intolerant persons in general.

People who are tolerant of those who differ from them show a concomitant degree of tolerance for ambiguity in their perception of complexities; furthermore, the tolerant want the exercise of authority tempered by personal responsibility when they exercise authority as well as when they submit to it.

It has become customary to talk about authoritarian personalities as characterized primarily by their intolerance for ambiguity. Their dislike for members of outgroups, the need for clear-cut dichotomies and black-white distinctions, as well as their need for authority relations of unrestrained power and

unqualified submission, may be understood in terms of their *intolerance for ambiguity*. It is my purpose here to suggest that it might be fruitful to perceive intolerance for ambiguity as an expression of a more basic motive: namely, as a *need for subjective certainty*.

C. THE BURDEN OF UNCERTAINTY

A basic problem in human action is presented by the gap between the multidimensional reality to which Man has to react and the necessity that such reaction be unidimensional lest he march in all directions at once, like the White Knight in *Alice in Wonderland*.

This gap between multidimensional reality and unidimensional action is bridged by the actor's perception of reality. The perception itself is selective. It abstracts from the plurality of aspects of the environment in order to obtain a basis for unidimensional action.

The act of perception is thus also a purposeful act that aims at conceiving the reality to which the perceiver and actor has to respond unambiguously and clearly. The more manifold and the less familiar the reality that has to be perceived, the more difficult the act of clear and unambiguous perception becomes. Uncertainty about the nature of what is being perceived not only impedes purposeful action, but also becomes a source of personal insecurity and anxiety even when no reaction on the part of the perceiver is called for.

Everybody is familiar with the psychic burden of uncertainty, of not knowing where one stands. Fear of an impending catastrophe is often harder to bear than the experience of the feared catastrophe itself. This explains the relief felt by the man on trial when he hears his harsh sentence, by the candidate when he learns that he has failed, and by the patient when he is informed that his ailment is fatal.

The tendency to perceive reality in accord with one's wishes and interests is sufficiently known. In a wider sense, self-interest also encompasses a longing for certainty, a desire for the kind of security emanating from the conscious assurance of knowing where one stands. The need "to know where one stands" may be satisfied, however, by a phantom of one's phantasy as long as this need does not originate in the necessity to adjust to reality.

The need for certainty constitutes a need for knowledge only as far as it is linked with readiness to test all knowledge for its congruence with reality. As far as the need for certainty is only based upon a desire for psychic comfort that comes from subjective certainty, it impedes the quest for objectively testable knowledge. The need for subjective certainty is thus diametrically opposed to a desire for objective certainty: that is, for objectively testable

knowledge. One obtains subjective certainty as soon as one is satisfied with subjectively revealed knowledge, whereas objective knowledge is always subject to the objective test that may confirm or reject.

The universal need to "know" the origin and form of the universe appears usually to be just a desire for subjective certainty and not a genuine quest for knowledge. Men in possession of such subjective certainty have resisted fiercely all efforts to deprive them of their favored myth about the creation and nature of the universe. Those who mediate scientific knowledge that destroys such favored myths often become martyrs of their zeal for the cause of objective certainty based upon scientific truth.

It is in this context that a revision of the conceptual scheme of the California F Scale of Authoritarianism seems necessary. The F Scale distinguishes only between those who score high and those who score low. Herewith the author proposes to distinguish the following two groups among the high scorers: those who "score high" because they stand in need of subjective certainty and those who "score high" because intellectual ineptness or inertia renders them indifferent.

On the surface, these two groups appear very much alike. The men in need of subjective certainty (as well as the intellectually indifferent) avail themselves readily of a myth that is simple and easy to grasp. They relinquish this myth for imperfect, and complex scientific truth only when the need to come to terms with reality appears compelling. The indifferent, however, are ready to accept scientific truth for pragmatic considerations insofar as necessity impels them and their intellects permit without undue upset. Those in need of subjective certainty, however, resent any disturbance of their cherished certainty bitterly. Those who point the way to the achievement of scientific truth incur their wrath.

The need for subjective certainty not only impedes the quest for objective testable knowledge about the world, but also hampers orientation in concrete social relationships. Such a need impedes the course of justice when, without further ado, it inspires a tendency to consider the accused as guilty. Uncertainty regarding the identity of those "who have done it" is most disturbing, especially in the case of major crimes. This feeling induces eagerness to consider inconclusive moments of suspicion as conclusive evidence. Those who question the conclusiveness of poorly founded suspicion are frequently advised to name those who have done it or to keep to themselves their doubts about the guilt of the accused.

Above all else, the complexity of legal procedure in criminal cases serves to protect the accused when those who suspect him want to satisfy their need for

subjective certainty, while others are simply indifferent. Legal procedure, with its rules of evidence, the provision of counsel, the right to appeal, and other institutions hardly redress the balance between the civilized principle that a man is innocent until proved guilty and the tendency to have a man pronounced guilty as soon as accused.

The need for subjective certainty also expresses itself in a need for clear-cut dichotomies with reference to social relationships in general and in relationships with authority figures in particular. This need is of special significance in the flexibility and rigidity of attitudes and response patterns in ingroup-outgroup relations. The studies that led to the formulation of the concept of the "authoritarian personality" were primarily concerned with this particular problem of attitudes and response pattern in ingroup-outgroup relations.

The more primitive and isolated a society is, the more the need for subjective certainty in social relations appears to be met by the objective conditions. All interaction takes place in a web of social relationships in which expectations are fairly well defined so as to serve as reliable guides. Whatever anxieties arise, over aspects of personal relations that are beyond control, are allayed by prescribed magical practices.

The more complex a society, the greater the number of undefined relationships that appear. They fluctuate between being marked by close personal ties at one extreme and complete strangeness at the other, with a great many mixed forms of varying intensity, varying permanence, and varying affect in between. The pluralism of personal, contractual, and transient relationships characteristic of industrial urban society defies efforts to establish clear dichotomies. The relationships to persons in positions of authority and the relationships to members of outgroups are of special interest in this context.

In relations to persons in authority and in relations to members of outgroups, cognition and reaction to cognition challenge the powers of perception and the capacities for adjustment. The authoritarian personality has a distorted perception of reality and subsequent difficulties in adjustment to the inadequately perceived reality.

The California studies of the authoritarian personality have made an epochal contribution to the behavioral sciences by their conceptualization of the "authoritarian personality" and by the development of the F Scale or Scale of Fascist Attitudes to measure authoritarianism. This authoritarianism of a person seems to be measured with high validity by those parts of the F Scale that refer to distorted perceptions of members of outgroups and of authority figures—perceptions distorted by a tendency toward rigid dichotomization.

The California F Scale of Authoritarianism differentiates between the au-

thoritarian and the nonauthoritarian on the basis of high scores and low scores. A valid objection to this practice is that a strong tendency toward dichotomization which results in a high score may be based *either* on emotional disturbances *or* on intellectual incompetence. The F Scale lumps the emotionally disturbed with the intellectually inert or inept. I propose that instruments should be developed to keep these two groups apart.

A low score on the F Scale indicates capacity *to perceive reality in its complexity* and to respond accordingly. This requires emotional stability as well as intellectual ability and effort. A high score on the F Scale indicates an incapacity to perceive complexities in reality, but this incapacity may be due either to emotional immaturity or to intellectual inertia or ineptness. Such incapacity *may be but does not have to be* due to a combination of emotional and intellectual shortcomings. It might prove fruitful to differentiate between these two as separate causal factors.

D. A DISTINCTION BETWEEN EMOTION AND INTELLECT AS FACTORS

We propose to illustrate the distinction suggested by the following paradigm:

	Emotionally mature	Emotionally immature
Intellectually competent	I	III
Intellectually incompetent	II	IV

1. Group I

Emotionally mature and intellectually competent—low scores on the F Scale, in quest for objective certainty.

2. Group II

Emotionally mature but intellectually incompetent, e.g., either inert or inept—high scorers on the F Scale; in appearances, like Groups III and IV, but subject to influence by experience; the intellectually inert in this group may respond to intellectual influence.

3. Groups III and IV

Emotionally immature, of varying intelligence—high scorers on the F Scale and in need of subjective certainty, the truly "rigid authoritarians" who may be expected to respond to intellectual considerations only after psychotherapy.

The authors of *The Authoritarian Personality* do not indicate the possibility of a differentiation between the emotional and the intellectual as diverse causal

factors. The volume has 990 pages. Only nine pages refer to this subject under the title "Ethnocentrism in relation to intelligence and education" (1, pp. 280-288). And the matter is dealt with briefly with the statement:

. . . In summary, ethnocentrism seems to have a low but statistically significant relation to both intelligence and education, the most educated and intelligent being, on the average, the least ethnocentric. However, these variables were studied only secondarily in the present research, and convincing determination of their relation to ethnocentrism requires more extended sampling, particularly at the lower educational levels (1, p. 287).

It seems that what is needed is not just more extended sampling, but a revision of the conceptual scheme. Levinson, the author of the chapter, senses this need for a differentiation of the intellectual from the emotional when he says that "the intellectual functioning of ethnocentric individuals, even those with above-average IQs, seems to be relatively rigid, . . . etc." (1, pp. 287-288). In other words, intelligence appears as a factor in its own right.

The failure of the California F Scale of Authoritarianism to distinguish between the emotionally disturbed and the intellectually inert or inept appears to have occasioned a measure of confusion. Thus, we find that Professor Lipset explicitly merges these two groups in his chapter on "Working-class authoritarianism" in his book on *Political Man* (6, pp. 97-130). Lipset states that "Acceptance of the norms of democracy requires a high level of sophistication and ego security . . ." (6, p. 115) and ". . . that the lower strata will be authoritarian; . . . that, other things being equal, they will choose the least complex alternative" (6, p. 122).

While the acceptance and understanding of the norms of democracy undoubtedly require, in Lipset's words, "a high level of sophistication and ego security," it seems mandatory to distinguish those lacking in one from those lacking in the other. We suggest that a person lacking in sophistication is likely to adjust to democratic norms of a pluralist society with little difficulty—albeit with but little understanding—while a person lacking ego security is apt to feel threatened not only by the comparative permissiveness of democratic norms, but also by the complexity of pluralism itself. In short, those lacking in sophistication need intellectual training; those lacking in ego security need psychotherapy.

Instead of distinguishing the "authoritarian" from the "nonauthoritarian," we distinguish between three groups: those in quest of objective certainty, the indifferent, and those in quest of subjective certainty. We make this distinc-

tion because we consider the practice of lumping the seekers after subjective certainty with the indifferent a basic fallacy of the concept of the "authoritarian personality."

It has to be granted that indifference based upon intellectual inertia or incompetence as well as quest for subjective certainty motivates perception in terms of clear-cut dichotomies and that, consequently, the members of both groups respond similarly when asked how they perceive certain matters. They differ, however, in their underlying motivations and consequently their responses mean different things in what might be expected of them in their future behavior.

Intellectual indifference motivates unquestioned acceptance of whatever does not disturb the comfort of the perceiver. Beyond this, the indifferent may be expected to be ready for pragmatic efforts to master complexity when it has direct consequence for existence. Therefore, we propose that even though the indifferent and the seekers for subjective certainty appear alike in their tendency to perceive in clear-cut dichotomies, the former are the most flexible and the latter are the most rigid in their response patterns. The former are ever ready to modify their response pattern when they perceive the need for such modification; the latter resist perception of a need for modification as a threat to their psychic security. The quest for subjective certainty, therefore, stands out as a motivation for hatred of whatever may disturb the dichotomous clarity of perception.

In relations to persons in position of authority, as well as in relations to members of outgroups, the distinction between those who seek objective certainty, the indifferent, and those who seek subjective certainty appears most fruitful.

Almost all men are subordinated to authorities in various forms and desire a measure of certainty in their relationships with them. All expect clear and unambiguous exercise of authority in those above them, and any sign of uncertainty and ambiguity evokes insecurity and resentment among subordinates. All desire certainty and dislike being disoriented. As subordinates, they want to be able to feel that those above them know what they are doing. The need for orientation with reference to authority figures may express itself, however, in three different ways—each characteristic of the three groups postulated, on the basis of their motives regarding certainty: those in need of subjective certainty, those in quest for objective certainty, and the indifferent.

The "indifferent" may be expected to accept authority without question so long as the exercise of authority is tolerable and indicates a measure of con-

sistency. They ask questions regarding legitimacy, definitions of power, responsibility, and competence only when they are upset by ineptitude, harsh oppression, or extreme crisis.

Those in quest of subjective certainty seek authority that is unlimited in scope and unrestrained in the exercise of its power. In their objection to and contempt for authority that operates under limitations and restraints, members of this group occasionally seem to be indomitable anarchists and rebels. That they are, in fact, pseudorebels shows only when they have occasion to submit to the total authority they crave or when they are in a position of authority themselves.

Those in search of objective certainty are motivated by a desire for objectively testable knowledge. Although they realize that human knowledge is necessarily piecemeal and limited, they seek knowledge for its own sake. We expect this group to strive in their relationship to authority for definitions of power, circumscription of responsibilities and obligations, establishment of grounds of legitimacy, and requirements of competence. In short, those in quest of objective certainty may be expected to concern themselves with the nature and functions of authority relations and the codification of pertinent rules. They act in that manner regardless of whether they exercise authority or are subordinated to it.

Like those in need of subjective certainty, those in quest of objective certainty object to vacillating authority; they, like the indifferent, object to oppressive authority. Unlike the indifferent and those in need of subjective certainty, this group is less concerned with aspects of subjective experience. Instead, they try to base what they demand regarding authority upon objectively codified principles, so that they may eliminate arbitrariness and caprice from relationships involving persons in authority and their subordinates.

In attitudes toward authority, we find different areas of overlap between the three groups; these areas characterize what the groups have in common and what separates them. The indifferent, as well as those striving for objective certainty, resent oppressive authority—the former, on the basis of their subjective experience; the latter, because of their attachment to principle. The indifferent, as well as those in need of subjective certainty, prefer their relationships to authority clearcut and unambiguous. But the former desire this for the sake of convenience; the latter, as a prop for their psychic stability. In their quest for subjective certainty in relations with authority, the latter develop a profound hatred and contempt not only for all authority not in accord with their demands and expectations, but also for all those who do not

share their desire for lucid clarity. If they themselves are in a position of authority, their hatred is also likely to be directed against the indifferent because these fail to do more than merely accept authority. They are inclined to resent oppression and thus do not give authority its due.

The three groups also differ in their relationships to members of outgroups as well as in the way they perceive outgroup and ingroup relations.

Aversion to what is alien and unknown seems to be nearly instinctive. With man and beast such aversion to and fear of what is unknown motivates caution and serves self-preservation. One of the basic differences between man and beast (and, also, between man and man) is found in the manner by which the unknown becomes familiar.

This difference is due to the use made of mind and the means of communications. Unqualified trust in all one encounters soon leads to grief. But the person to whom all that is unknown remains unknown also suffers. By way of analogy, a man who eats mushrooms in the woods indiscriminately will poison himself sooner or later; so anyone depending for nourishment on whatever he finds in the woods does well to acquaint himself with potential sources of food. Men do well to have little trust in men they do not know; but if they have to deal with strangers, as we must in our urban society, they have to develop ways to get to know them.

The aversion of man to outsiders is as old as man himself. When the ancient Greeks talked about *Hoi Barbaroi*, they did not refer to our present notion of barbarians, but simply to all people not Greek. In no other areas are the differences between the three groups more clearly visible, and in no other area are the differences between them of such crucial consequence.

In their attitudes toward and adjustment to intergroup contacts, the indifferent and those in quest of subjective certainty are clearly set off from those in quest of objective certainty, and superficial observation is apt to lump them together.

Those in quest of subjective certainty tend to identify being human with being a member of their ingroup. From this position, they question the humanity of members of outgroups. The indifferent go along with this attitude as long as no compelling evidence to the contrary is presented. But the indifferent are ready to modify their views when they are confronted with evidence, for the humanity of outgroup members they find hard to ignore (especially the evidence of direct personal contact). The indifferent modify their rejection of outgroup members to the extent to which these become more similar to themselves. Eventually the limiting case is reached causing outgroup mem-

bers to pass into their ingroup membership. Without undue reflection, the indifferent adjust to membership in diverse ingroups and accept others as outgroup members at one level and as ingroup members at another.

Those in quest of subjective certainty part ways with the indifferent at all these points. Direct contact with outgroup members is accompanied by such intensive discomfort that any modification of aversion is precluded. The more the members of the outgroup resemble their own, the more the seekers of subjective certainty feel threatened by them in what they consider to constitute their own exclusive humanity. They are incapable of accepting a concept of man that goes beyond their neatly arranged and clearly separated categories.

Unlike those in need of subjective certainty, the indifferent are ready to accept assimilated outgroup members as their fellows, and they consider those of mixed racial origins closer to themselves than those of completely alien racial strains. Those in need of subjective certainty subscribe to racial theories that push those of mixed racial origins even further outside what they consider the pale of mankind than those of unmixed nonwhite racial descent. The racist point of view is epitomized in the protest against offering educational opportunities to colored people. This protest has been phrased by a prominent exponent of racist theory and policy as follows: "...it is criminal insanity to train a semi-ape until one thinks one has made a lawyer out of him" (4, pp. 478-479). Mixing the races of men is branded in this context as contrary to nature, just as the pairing of fox and goose is contrary to nature. The existence of any common humanity between diverse racial groups is explicitly and vehemently denied.

The concept of the "authoritarian personality" was developed upon the study of anti-Semitism. We shall now see how anti-Semitism in its most virulent form appears to be motivated by a need for subjective certainty. In his autobiography, an Austrian anti-Semite writes how he came to hate Jews:

The town L. had only very few Jews. In the course of centuries their appearance had europeanized and had become human. I even considered them as Germans" (4, pp. 55).

It is noteworthy here how the need for subjective certainty narrows and transforms the concept of man by compulsive categorization.

The author then comes to what he considers one of the crucial experiences of his life:

... at one time, as I was strolling through the inner city I suddenly encountered an appearance in a long coat with black locks.

Is this also a German?

As always in such cases I began to relieve the doubt through books. I then bought for a few Heller the first anti-Semitic pamphlets of my life (4, pp. 59).

We are not confronted here merely by a deep seated aversion to the alien. We find, rather, a special type of anxiety psychosis occasioned not so much by the alien but by the aspect of the alien that defies its definition and categorization. The very familiarity of some of the features of the alien occasions intensive psychic discomfort because that element of limited familiarity frustrates the desire to categorize with narrow precision. The only suitable category, the category "human," is beyond the grasp of narrow minds.

The need for clear-cut subjective certainty is frustrated most painfully by the pluralist level of ingroup formations that cause a man to partake of ingroup membership at one level with persons belonging to outgroups at other levels. The response of those in need of subjective certainty is *not* readier acceptance of outgroup members but fierce demands for the exclusion from all ingroup membership of all who at any other level belong to outgroups. Resulting frustrations have been known to motivate a hatred that is literally murderous.

There is an essential difference between the rejection of the alien that is motivated by a pathological quest for subjective certainty and the aversion to the alien out of fear of the unknown. In his poem "The Stranger"⁸ Kipling expresses such a fear of the unknown (5, pp. 535).

The Stranger within my gate
He may be true or kind,
But he does not talk my talk—
I cannot feel his mind.
I see the face and the eyes and the mouth,
But not the soul behind.

The men of my own stock
They may do ill or well,
But they tell the lies I am wonted to,
They are used to the lies I tell;
And we do not need interpreters
When we go to buy and sell.

The Stranger within my gates,
He may be evil or good,
But I cannot tell what powers control—

⁸ Rudyard Kipling, *Rudyard Kipling's Verse*, Definitive Edition Garden City, New York: Doubleday Doran and Co., Inc., 1942, p. 549.

What reasons sway his mood;
Nor when the Gods of his far-off land
Shall repossess his blood.

The men of my own stock,
Bitter bad they may be,
But, at least they hear the things I hear,
And they see the things I see;
And whatever I think of them and their likes
They think of the likes of me.

This was my father's belief
And this is also mine:
Let the corn be all one sheaf—
and the grapes be all one vine,
Ere our children's teeth are set on edge
by bitter bread and wine.

With this poem, Kipling argued against admitting alien immigrants; but Kipling explicitly accepts the humanity of these aliens. He goes so far as to admit that they might well be better and more truthful than he and his kind, and he merely suggests that there was really no need to undergo the risks involved in putting this question to a test. The difference between the rejection of aliens expressed by Kipling and the aversion to outgroup members expressed by the document quoted above is not merely quantitative but qualitative. Any measure that fails to give expression to the qualitative nature of the difference involved appears to be inadequate.

If it were not for the last stanza one might even say that Kipling bases his opposition to the admittance of aliens upon a frankly admitted confession of mental inertia. But taken as a whole, the final stanza included, the poem affords generous recognition to the humanity of the aliens. This explicit recognition of commonly shared humanity provides an obvious basis for a future modification of aversion should closer contact come about. This appreciation of a common humanity shared with men the world over enables Kipling to exclaim in "The Ballad of East and West":⁴

Oh, East is East, and West is West, and never the twain shall meet,
Till Earth and Sky stand presently at God's great Judgment Seat;
BUT there is neither East nor West, Border, nor Breed, nor Birth,
WHEN two strong men stand face to face, though they come from
the ends of the earth.

⁴ Rudyard Kipling, *Rudyard Kipling's Verse*, Definitive Edition Garden City, New York: Doubleday Doran and Co., Inc., 1942, p. 233.

Kipling not only expressed the common fear of the unknown, but he also recognized this fear as a weakness which the strong may overcome. It takes strength to adjust to the pluralism and complexities of industrial society and to perceive the problem of orientation in an intertwined web of social relationships as a challenge to be met. The striving for objective certainty (that is, for objectively testable knowledge and for understanding transcending such knowledge) requires intellectual as well as emotional strength.

It takes intellectual effort as well as emotional maturity to aspire after the stoic ideal that may enable a man to say with Terence "Homo Sum—Nihil Humanum Alienum Puto." (I am a man—I consider nothing human as alien.) Those who turn their backs upon the stoic principle of a common humanity, however, are only alike in appearances because their motives in rejecting outsiders are basically different: On one side we have those who share the sentiments of Kipling in "The Stranger," and who avoid what is alien because they want to avoid the hazards and efforts involved in becoming acquainted. On the other side we find those who insist that aliens are not human.

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(Manuscripts are printed in the order of final acceptance)

An analysis of certain aspects of teacher-pupil relationships as determined by teacher, pupil, and parent opinions	191
BY DOYNE M. SMITH AND BERNICE COOPER	
Complementary and competing-order effects in opinion change	201
BY RALPH L. ROSNOW AND ROBERT E. LANA	
Field dependency, authoritarianism, and perception of the human figure	209
BY IRVING R. STUART	
Personality and attitudinal correlates of psychiatric-aid performance	215
BY M. POWELL LAWTON	
The need system of college students	227
BY STANLEY ABRAMS	
Measurement of group effectiveness in natural isolated groups	241
BY E. K. ERIC GUNDERSON AND PAUL D. NELSON	

(OVER)

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Authoritarianism and response to attitude similarity-dissimilarity . . .	251
BY DONN BYRNE	
Task performance and group structure as a function of personality and feedback	257
BY CAROL LUCAS	
Value preferences and interpersonal behavior	271
BY LEON GORLOW AND RALPH BAROCAS	
A comparison of social-distance scores among college-student samples . . .	281
BY JOHN FAGAN AND MARION O'NEILL	
The relationship between sociometric measures of popularity among children and their reactions to frustration	291
BY LESLIE KRIEGER AND MILTON M. SCHWARTZ	
A longitudinal study of sociometric choice and the communication of values .	297
BY STANTON P. FJELD	
Measuring the connotations of personality traits: A validation study . . .	307
BY LOUIS J. NIDORF AND WALTER H. CROCKETT	
Past experience, self-evaluation, and present adjustment	311
BY E. K. ERIC GUNDERSON AND LAVERNE C. JOHNSON	
Source certainty as a variable in conformity behavior	323
BY ROBERT N. VIDULICH AND FRED P. STABENE	
Attitudes toward deafness as a function of increasing maturity	331
BY LEOLA S. HOROWITZ, NORMA S. REES, AND MILTON W. HOROWITZ	
Faculty academic-role expectations	337
BY A. A. LACOGNATA	
Interaction patterns in heterosexual dyads varying in degree of intimacy .	345
BY MARVIN E. SHAW AND ORIN W. SADLER	
The prediction of social action from a dimension of internal-external control .	353
BY BONNIE RUTH STRICKLAND	
BOOKS RECENTLY RECEIVED	359

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Bureau of Educational Studies and Field Services, University of Georgia

DOYNE M. SMITH AND BERNICE COOPER

A. INTRODUCTION

How important are human relationships in a classroom? Do the existent relationships have a significant effect upon the learning that takes place in a classroom? It seems obvious that teacher-pupil relationships are tremendously important in any learning situation. If the teacher knows her pupil—his interests, abilities, special needs—it would seem that she could guide and challenge his intellectual development more successfully than otherwise. If the pupil feels that the teacher does know him, certainly a more positive attitude should accompany his response to classroom activities and more learning should take place.

Pupils have often identified as one measure of a good teacher the fact that the teacher is concerned about the individual. How many teachers feel a sincere and personal concern for each pupil in the classroom? And does the pupil believe that his teachers really care about him? Does the pupil feel that he is treated fairly? The parent's opinion is important, also. The parent's endorsement or criticism of strictly academic activities often may be influenced by his feelings concerning the personal relationships that affect his child. Does the parent feel that the teachers understand his child? care about him as a person? treat him fairly?

B. PURPOSE OF THE STUDY

The purpose of this study was to determine how well teachers, pupils, and parents are satisfied with certain aspects of teacher-pupil relationships in the school and to compare the opinions of the three respondent groups.

C. COLLECTION OF DATA

Opinions concerning how teachers, pupils, and parents felt about their schools were secured through the administration of the Illinois Inventory of Pupil (Parent, Teacher) Opinion to 8,894 subjects in 20 of Georgia's 198

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school systems. The participants included 1,126 teachers (691 teachers of the 6th and 8th grades and 427 teachers of the 12th grade), 2,999 parents (1,703 parents of 6th-grade and 8th-grade pupils and 1,296 parents of 12th-grade pupils), and 4,779 students (1,927 6th-grade, 1,616 8th-grade, and 1,236 12th-grade pupils).

The respondents included all the teachers, all the students of the 6th, 8th, and 12th grades, and the parents of those student respondents in 20 high schools, 10 schools with grades one through 12, and 78 elementary schools in Georgia.

After an extensive orientation period, the inventories were given and completed under conditions that assured the respondents of complete anonymity.

D. ANALYSIS OF DATA

Four inventories, each appropriate for a particular respondent group, were given. Although the number of questions on the four inventories ranged from 32 to 70, this report is concerned with responses to only six questions. Of the six questions, not all were included on each of the four inventories; so, in certain instances, no data are available. The opinions have been summarized and are reported in terms of (a) teachers' understanding of pupils, (b) teachers' concern for pupils, and (c) teachers' treatment of pupils.

1. Teachers' Understanding of Pupils

The summary of teachers' responses to the question "How many of the pupils in your class or classes do you understand as well as you think you should?" is presented in Table 1. Although slightly more than 50 per cent of all the teachers believed that they understood "all or almost all" of the pupils as well as they should, almost 60 per cent of the teachers of the elementary pupils, as compared with slightly less than 40 per cent of the high-school teachers, believed this to be the case. When the three least favorable responses were combined, only eight per cent of the elementary teachers,

TABLE 1
RESPONSES TO THE QUESTION "HOW MANY OF THE PUPILS IN YOUR CLASS OR CLASSES DO YOU UNDERSTAND AS WELL AS YOU THINK YOU SHOULD?"

Teachers in	N	Responses in per cent						No data
		None or almost none	Few	About half	Most	All or almost all	I have no opinion	
Elementary	691	0	2	6	30	59	1	2
High school	435	3	5	13	38	38	2	1
Total	1126	1	3	9	33	51	1	2

as compared with 21 per cent of the high-school teachers, indicated that they understood "none or almost none," "few," or "about half" of the students as well as they should.

The responses to the question "How many of your fellow [your, your child's] teachers understand their pupils' [your, your child's] abilities, interests, and special needs as well as they should?" are summarized in Table 2. An examination of the data shows that, on this item, elementary teachers

TABLE 2
RESPONSES TO THE QUESTION "HOW MANY OF YOUR FELLOW [YOUR, YOUR CHILD'S]
TEACHERS UNDERSTAND THEIR PUPILS' [YOUR, YOUR CHILD'S] ABILITIES,
INTERESTS, AND SPECIAL NEEDS AS WELL AS THEY SHOULD?"

INTERESTS, AND SPECIAL NEEDS AS WELL AS THE CHILD'S								
Grade	N	None or almost none	Few	Responses in per cent			I have no opinion	No data
				About half	Most	All or almost all		
<i>Teachers</i>								
Elementary	691	1	5	3	47	34	9	1
High school	435	0	9	18	46	23	4	0
Total	1126	0	7	9	47	30	7	0
<i>Students</i>								
12th grade	1236	4	16	20	37	17	6	0
<i>Parents</i>								
High school	1299	2	8	11	36	27	16	0

rated their fellow teachers more favorably than did high-school teachers. The elementary teachers reported that 34 per cent of their fellow teachers and the high-school teachers reported that 23 per cent of their fellow teachers understood "all or almost all" of their pupils. Both elementary and high-school teachers reported that almost 50 per cent of their fellow teachers understood "most" of their pupils, the second most favorable rating. However, high-school teachers reported 27 per cent of their fellow teachers in the three least favorable responses, as compared with nine per cent of the fellow teachers of elementary teachers.

Perhaps the primary reason that elementary teachers received more favorable responses relative to understanding their pupils than did high-school teachers is due to the difference, in general, of the organization of the two groups. The self-contained classroom of the majority of elementary schools means that the elementary teacher has fewer pupils to learn than has the departmentalized high-school teacher. In addition, the elementary teacher has the same pupils for most or all of the day; thus providing more opportunities to get to know the pupils individually. Although the reason for the difference seems logical, there are implications here for school organization. If one accepts the assumption that knowing the interests, needs, and abilities of

pupils is an academic advantage, then perhaps the evidence points to the desirability of continuing the practice of self-contained classrooms for elementary schools rather than departmentalization at that level.

The responses of teachers concerning understanding of pupils varied considerably when reporting on self-understanding as compared with reporting on the understanding of fellow teachers. For example, 59 per cent of the elementary teachers reported that they understood "all or almost all" of their pupils as compared with 34 per cent of their fellow teachers whom they reported understood "all or almost all" of their pupils. Thirty-eight per cent of the high-school teachers reported that they knew "all or almost all" of their pupils as well as they should as compared with 23 per cent of their fellow teachers whom they felt knew "all or almost all" of their pupils as well as they should.

The data do not indicate why teachers rated themselves higher on pupil understanding than they rated fellow teachers. Did the teachers then *overrate* themselves or *underrate* their fellow teachers?

How well do pupils feel that teachers understand them? From Table 2, it can be seen that pupils felt that fewer teachers understood them than teachers believed. The 12th-grade pupils reported considerably fewer teachers in the favorable responses and more teachers in the less favorable responses than teachers reported. For example, the pupils reported 17 per cent of the teachers understood "all or almost all" of them while teachers reported 30 per cent of the teachers understood "all or almost all." On the negative side, pupils reported that 16 per cent of the teachers understood a "few" of them while teachers reported that nine per cent of the teachers understood a "few" of the pupils.

Parents of high-school pupils reported that 63 per cent of the teachers understood "most" or "all or almost all" of their children and this percentage was more than the pupils themselves reported but less than teachers reported. Perhaps surprisingly, the parents reported an even higher percentage of teachers (27 per cent) who understood "all or almost all" the pupils than the teachers themselves reported (23 per cent). Also considerably more parents reported "no opinion" than did teachers or pupils.

There was not an exact counterpart of the above question on the inventory for the 6th and 8th grade pupils and the inventory for parents of elementary pupils had a different rating scale than that used by parents of high-school pupils. Table 3 summarizes the opinion of 6th-grade and 8th-grade pupils and parents of elementary pupils for a different but similar question; that is, "Do you feel that your [your child's] teacher knows you [your child] as a person as well as she should?"

TABLE 3
RESPONSES TO THE QUESTION "DO YOU FEEL THAT YOUR [YOUR CHILD'S] TEACHER
KNOWS YOU [YOUR CHILD] AS A PERSON AS WELL AS SHE SHOULD?"

Grade	N	No	Responses in per cent		No data
			I am not sure	Yes	
<i>Students</i>					
6th grade	1927	6	21	72	1
8th grade	1616	13	35	52	0
Total	3543	9	27	64	0
<i>Parents</i>					
Elementary children	1700	9	39	52	0

From Table 3, it can be seen that more 6th-grade pupils than 8th-grade pupils or parents of elementary children believed that the teachers knew them as well as they should. Approximately three-fourths of the 6th-grade pupils reported that their teachers did know them while only slightly more than one-half of the 8th-grade pupils and parents of elementary pupils reported that teachers knew them as well as they should. The 6th-grade pupils also reported that there were fewer teachers who did not know them than did 8th-grade pupils or parents of elementary pupils. In addition, parents and 8th-grade pupils were more uncertain about the teacher's knowledge than were 6th-grade pupils.

One possible explanation for the difference in the opinions of the 6th-grade and 8th-grade pupils may be the difference in the characteristics of the two age groups; that is, the eighth grade pupils are reaching adolescence with the attendant problems of growing up. Or, more of the 8th-grade pupils may be in a departmentalized school plan and consequently have lost the closeness of association that comes with having only one teacher.

2. Teachers' Concern for Pupils

One aspect of teacher-pupil relationships in a classroom is the sincerity of a teacher's concern for the individual pupils in her classroom. Do teachers, pupils, and parents feel that teachers have this quality? Again, more teachers reported that they cared about each pupil as a person than was reported by pupils or by parents. For example, from Table 4, it can be seen that 54 per cent of the elementary teachers and that 38 per cent of the high-school teachers reported that "all or almost all" teachers cared about the individual but only 21 per cent of the 12th-grade pupils, 20 per cent of the parents of elementary pupils, and 29 per cent of the parents of high-school pupils reported that "all or almost all" teachers cared about the individual. Of the respondents to this question, the 12th-grade pupils reported that a higher

TABLE 4
 RESPONSES TO THE QUESTION "HOW MANY OF THE TEACHERS IN YOUR SCHOOL REALLY
 SEEM TO CARE ABOUT EACH PUPIL [YOU, YOUR CHILD] AS A PERSON WHO NEEDS
 SYMPATHETIC UNDERSTANDING AND ATTENTION?"

Grade	N	None or almost none	Responses in per cent				I have no opinion	No data
			Few	About half	Most	All or almost all		
<i>Teachers</i>								
Elementary	691	0	2	3	36	54	3	2
High school	435	0	5	8	44	38	4	1
Total	1136	0	3	5	40	48	3	1
<i>Students</i>								
12th grade	1236	6	18	17	32	21	3	3
<i>Parents</i>								
Elementary	1700	1	3	5	16	20	55	0
High school	1299	2	10	9	21	29	19	0
Total	2999	2	6	6	23	24	39	0

percentage of teachers did *not* care about pupils than was reported by the other respondent groups. For example, there were 41 per cent of the 12th-grade pupils and only 13 per cent of the high-school teachers who reported that "about half" or "few" or "none or almost none" of the teachers cared about the individual.

Also, as has been previously stated, 40 per cent of the 12th-grade pupils as compared with 27 per cent of the high-school teachers reported that "about half" or "few" or "none or almost none" of the teachers understood the abilities, interests, and special needs of the pupils. Why are there such differences between pupil and teacher opinions? Certainly the differences are striking enough to warrant attention and concern by faculty and administration.

3. Teachers' Treatment of Pupils

Another aspect of teacher-pupil relationships is related to the satisfaction of those concerned with the way pupils are treated. The answers to the question "In general, are you satisfied or dissatisfied with the way pupils [you, your child] are treated by the teachers and other officials of your school?" are summarized in Table 5. From 20 to 31 per cent of the various respondent groups reported "Very well satisfied," and from 43 to 57 per cent reported "satisfied." When these two levels of satisfaction are combined, the data reveal a high degree of satisfaction with the way pupils are treated. However, it may be noted again that more elementary teachers reported a high degree of satisfaction and fewer 12th-grade pupils reported a high degree of satisfaction than did other groups. Also, 21 per cent of

TABLE 5
RESPONSES TO THE QUESTION "IN GENERAL, ARE YOU SATISFIED OR DISSATISFIED WITH THE WAY PUPILS [YOU, YOUR CHILD] ARE TREATED BY THE TEACHERS AND OTHER OFFICIALS OF YOUR SCHOOL?"

OFFICIALS OF YOUR SCHOOL								
Grade	N	Responses in per cent						
		Very much dissatisfied	Dissatisfied	Half and half	Satisfied	Very well satisfied	No opinion	No data
<i>Teachers</i>								
Elementary	691	1	1	5	57	31	4	1
High school	435	1	3	12	53	28	3	0
Total	1126	1	2	8	56	30	3	0
<i>Students</i>								
12th grade	1236	1	5	21	43	20	1	9
<i>Parents</i>								
Elementary	1700	0	2	9	54	30	5	0
High school	1299	1	2	12	52	29	4	0
Total	2999	0	2	10	54	30	4	0

12th-grade pupils reported that they were "half and half" satisfied and this represents more dissatisfaction by this group than by any other respondent group.

A part of the satisfaction felt concerning the way pupils are treated undoubtedly is related to whether they are treated fairly. Data pertaining to "How often do teachers and other officials of your school treat pupils [you, your child] fairly?" are presented in Table 6. When the percentages of those reporting that teachers and other officials "usually" or "always or

TABLE 6
RESPONSES TO THE QUESTION "IN GENERAL, HOW OFTEN DO THE TEACHERS AND OTHER OFFICIALS OF YOUR SCHOOL TREAT PUPILS [YOU, YOUR CHILD] FAIRLY?"

OFFICIALS OF YOUR SCHOOL TREAT PUPILS [100, FOUR GRADES]								
Grade	N	Responses in per cent						
		Never or almost never	Seldom	About half time	Usually	Always or almost always	No opinion	No data
<i>Teachers</i>								
Elementary	691	0	0	0	28	68	2	2
High school	435	0	0	0	34	62	3	1
Total	1126	0	0	0	31	65	2	2
<i>Students</i>								
6th grade	1927	4	3	9	28	55	0	1
8th grade	1616	5	2	11	42	40	0	0
12th grade	1236	1	2	9	42	45	1	0
<i>Parents</i>								
Elementary	1700	0	1	4	29	57	9	0
High school	1299	0	1	5	37	48	9	0
Total	2999	0	1	5	33	52	9	0

almost always" are combined the differences reported by teacher, pupil, and parent groups are not so striking. These frequencies were reported by 96 per cent of both teacher groups, 82 to 87 per cent of the pupil groups, and 85 to 86 per cent of the parent groups. However, there is a difference if only the most favorable response of "always or almost always" is considered. For example, 68 per cent of the elementary teachers but only 40 per cent of the 8th-grade pupils reported that teachers and other officials "always or almost always" treated pupils fairly. It seems significant, also, that pupil groups were the only respondents to report that teachers and other officials "never or almost never" treated pupils fairly. Of the pupil groups, slightly more of the 8th-grade pupils than other pupils reported that teachers and other officials "never or almost never," "seldom," or "about half time" treated pupils fairly. No teacher gave any of the three least favorable responses.

E. CONCLUSIONS

From this study concerning certain aspects of teacher-pupil relationships as determined by an opinionnaire the following conclusions are reached:

1. More elementary than high-school teachers reported that they understood the pupils as well as they should.
2. Elementary teachers reported that more of their fellow teachers understood the pupils as well as they should than did high-school teachers.
3. Both elementary and high-school teachers reported that more of them understood their pupils as well as they should than did their fellow teachers.
4. The high-school teachers reported that more of them understood the pupils than was reported by the 12th-grade pupils.
5. Parents of high-school pupils reported that a majority of the teachers understood their children.
6. More 6th-grade pupils than 8th-grade pupils or parents of elementary pupils reported that teachers knew them as well as they should.
7. More teachers reported that they cared about each pupil as an individual than was reported by pupils or by parents.
8. A high degree of satisfaction with the way pupils were treated was reported by all respondent groups with less variation in opinion on this item than on other items in this study.
9. Although a high percentage of all groups reported that "usually" or "always or almost always" the teachers and other officials treated pupils fairly, more teachers than pupils or parents reported this to be true.

10. The findings of this study indicate that teachers and administrators should give some study and consideration to these aspects of teacher-pupil relationships, with better understanding as their goal.

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COMPLEMENTARY AND COMPETING-ORDER EFFECTS IN OPINION CHANGE*¹

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A. PROBLEM

It has been reported that the direction of opinion change may be influenced by the order of presentation of opposing persuasive communications. Lana (4) has demonstrated that subjects who are familiar with a topic tend to be influenced more by the first argument they hear (*primacy*), while subjects unfamiliar with a topic tend to be influenced more by the last argument (*recency*). Rosnow and Russell (5) have shown that when a reinforcing event immediately follows presentation of the arguments, opinion may be changed in the direction of the one argument closer in time to the reinforcement. When both of these variables (*viz.*, familiarity and reinforcement) act at the same time, question can be raised as to whether they combine or compete with one another to produce an order effect in opinion change.

B. PROCEDURE

To answer this question, 160 juniors and seniors from the Wakefield High School, Arlington, Virginia, took part in an opinion-change study, the design of which is outlined in Table 1. The students, meeting in eight classes, completed pretest opinion and familiarity questionnaires on the topic of civil defense and indicated their mood on a seven-point checklist of eight adjectives. After the experimenter had thanked the students for their cooperation and had left the room, six of the classes (A₁ through A₆) were given a difficult unannounced quiz. Two days later, and immediately after completing the second of three mood checklists, the matter of the grades on the quiz was brought up at the beginning of two of the classes (A₃ and A₄). At that time, the instructor told the students that their performance on the quiz was poor and that their final averages in the course would suffer if he were to count their grades. Further, he told them that he would count the grades

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TABLE 1
DESIGN OF THE EXPERIMENT

Treatment	Class							
	A ₁	A ₂	A ₃	A ₄	A ₅	A ₆	A ₇	A ₈
1. Pretest opinion, familiarity, and Mood Questionnaire No. 1	x	x	x	x	x	x	x	x
2. Surprise Quiz	x	x	x	x	x	x		
3. Two-day interval	x	x	x	x	x	x	x	x
4. Mood Questionnaire No. 2	x	x	x	x	x	x	x	x
5. Reinforcement			x	x				
6. Order of communication pro, con con, pro	x		x		x		x	
7. Reinforcement	x	x		x		x		x
8. Posttest opinion	x	x	x	x	x	x	x	x
9. Reinforcement					x	x		
10. Mood Questionnaire No. 3	x	x	x	x	x	x	x	x

in some classes, but that he would not do so for their class. Immediately following this announcement "not to count the grades," opposing persuasive communications on civil defense were read by the experimenter to the students, the pro communication (in favor of a large defense program) preceding the con communication (against a large defense program) for Class A₈ and the reversed order of presentation for Class A₄. Following this, posttest opinion questionnaires and mood checklists were completed. Classes A₁ and A₂ differed from Classes A₃ and A₄ in that the announcement "not to count the grades" was made immediately *following* presentation of the communications. For Classes A₅ and A₆, this rewarding announcement (reinforcement) was not made until after both communications had been presented and posttest opinion had been measured. Classes A₇ and A₈ constituted non-anxiety control classes. Persuasive communications were read to these classes, and both pretest and posttest opinion was measured; but there was no surprise quiz, hence no reinforcement.

1. Instruments

a. Persuasive communications. These communications, on large *versus* small civil-defense programs, were the same as those used by Hovland (2) to isolate a persuasibility factor. The communications were read to and then rated by a ninth group of students for perceived controversialism of the issue and for relative strength of the content of the two communications. Civil defense was rated as moderately controversial in both the students' own opinions and in the way they felt the topic was perceived by the "American people as a whole." The argument in favor of a "large civil-defense program" was rated as more strongly written than that in favor of the "small civil-defense program," with $df = 23$, $t = 3.4$, $p < .01$.

b. *Opinion questionnaires.* These consisted of five five-point Likert items. The range was five through 25, with the former score representing the strongest con viewpoint; and 25, the strongest pro viewpoint.

c. *The mood questionnaire.* This questionnaire was a seven-point checklist of eight adjectives, a neutral quadrad of four adjectives, and an anxiety quadrad consisting of "jittery," "shaky," "excitable," and "anxious." The questionnaire was pretested on two independent groups of college students. Significant predicted pre-post differences in anxiety ($p < .05$) were measured using subjects who completed the questionnaire just prior to their taking a midterm examination and then after their grades had been announced. The range for each quadrad was four through 28. For the anxiety quadrad, a score of four indicated the absence of anxiety; and 28, the presence of extreme anxiety.

d. *The familiarity questionnaire.* This questionnaire consisted of five open-end, 12 multiple-choice, and four true-false information items on civil defense. The range was zero through 37, with a score of zero indicating no measurable familiarity; and 37, high familiarity with the topic.

C. RESULTS

Situational variables crucial to the entire study were the efficacy of the quiz in arousing anxiety and of the announcement "not to count the grades" in reducing that anxiety. Four analyses of covariance were applied to the responses to Mood Questionnaire No. 2 and Mood Questionnaire No. 3, while covarying on responses to Mood Questionnaire No. 1. With Mood Questionnaire No. 2 as the criterion variable, and with three and 155 degrees of freedom, $F = 4.2$ ($p < .01$), suggesting that anxiety was effectively induced for the appropriate treatment groups. Using Mood Questionnaire No. 3 as the criterion variable ($df = 3, 155$), $F = .8$ ($p > .05$)—the implication being that the affective state resulting from the reduction of anxiety may be similar in sensation to that experienced by the nonanxiety controls.

On the basis of the demonstrated efficacy of the "reinforcing" event to reduce anxiety, the analysis of covariance, as well as the subtractive procedure described by Hovland (1), was applied to the responses to the opinion questionnaires. For the covariance, high-familiarity and low-familiarity subgroups were formed after a series of median high-low splits on scores for the familiarity questionnaires. Table 2 presents a summary of the covariance. The main effect for familiarity is significant beyond the .01 level. All other main and interaction effects are not significant at the .05 level. Table 3 summarizes results of the subtractive procedure on different orders of presentation of communications for high-familiarity and low-

TABLE 2
SUMMARY OF ANALYSIS OF COVARIANCE

Source	<i>df</i>	<i>MS</i>	<i>F</i>
Mood (A)	3	6.4	.7
Order (B)	1	3.6	.4
Familiarity (C)	1	44.4	4.9*
AB M \times O	3	3.7	.4
AC M \times F	3	4.2	.5
BC O \times F	1	7.6	.9
ABC M \times O \times F	3	1.6	.2
Error	143	9.0	

* Significant at .01 level.

familiarity subgroups within each treatment. Probabilities of less than .05 are associated with two recency effects and with one primacy effect. Because directional effects were hypothesized, the one-tailed test of significance was used.

D. DISCUSSION

Thorndike's Law of Effect states in part:

Of several responses made to the same situation, those which are accompanied or closely followed by satisfaction . . . will be more firmly connected with the situation. . . . The greater the satisfaction . . . the greater the strengthening of the bond (6, p. 244).

The results of experiments by Thorndike demonstrated what was thought to be the spread of the effect of a rewarding state of affairs on the connection to which it belongs as well as on adjacent prior and succeeding connections. This spread of positive effects produces a reward gradient that strengthens neighboring punished connections (7, 8). Tilton (9) showed that there is an increasing tendency for punished responses contiguous to the correct response to be repeated more frequently than those remote from the correct response, while Zirkle's work (10) implied that what is repeated is a neighboring response. Finally, Jenkins and Sheffield (3) produced evidence to support the notion that it is the response rather than the connection that enters most prominently into the spread of effect.

The implication may be that cognitive elements of the reinforcement maintain themselves for a period of time; hence a reinforcement should increase the probability of a response that follows it as well as the probability of the response that precedes it. Because of the spread of effect, it was hypothesized that when two opposing communications are read to subjects, the communication closer in time to a reinforcing event has the greater influence in changing opinion. Thus, recency was predicted for the case in

which communications precede reinforcement; and primacy, for the case in which communications follows reinforcement.

For the case in which communications precede reinforcement (Classes A_1 and A_2) and for which recency was hypothesized, Table 3 indicates a significant recency effect for the low-familiarity subgroup (B_2) and a non-significant order effect for the high-familiarity subgroup (B_1). However, from Lana's study, primacy and recency were hypothesized respectively for the high-familiarity and low-familiarity subgroups.

Similarly, for the case in which primacy was hypothesized from the spread of effect (A_3 and A_4), a nonsignificant order effect is obtained for the subgroups for which low familiarity suggests recency (B_2); while significant primacy is obtained for the subgroup for which high familiarity suggests a complementary primacy effect (B_1).

It is apparent that for the treatment groups for which competing order effects were suggested and subsequently for which opposing predictions would be made ($A_{1,2}B_1$ and $A_{3,4}B_2$), results are nonsignificant statistically. However, when variables were expected to combine to produce a significant order effect ($A_{1,2}B_2$ and $A_{3,4}B_1$), results are in fact significant and in the predicted directions.

Moreover, in the case for which reinforcement was absent (A_7 and A_8), the hypothesized recency is obtained for the low-familiarity subgroup (B_2) and the hypothesized primacy is implied by differences for the high-familiarity subgroup (B_1).

The situation is complicated further by the fact that the communications are rated differently in terms of their perceived strength. The possibility that the stronger of the two arguments might have had a greater effect on opinion change than the weaker one was investigated by computing the chi square for direction of opinion change. With two degrees of freedom, chi square is 55.2 ($p < .001$), and there appears to be a significant trend in the direction advocated by the con communication (or the weaker of the two communications). This trend may also be observed by noting the direction of pre-post differences in Table 3. It may be that the stronger argument incurs resistance simply because of its relatively stronger stand, precipitating (perhaps) something of a negativistic reaction on the part of the young people.

The fact that the covariance yields only one significant effect—and this, the main effect for familiarity—raises some question as to whether familiarity may be expected to produce a stronger order effect than reinforcement. In any event, present findings throw doubt on the notion that primacy-producing or recency-producing variables combine additively to yield simple-order effects in opinion change.

E. SUMMARY

One hundred sixty high-school students took part in an opinion-change experiment using the Hovland civil-defense communications. When complementary order effects were hypothesized and when reward immediately followed presentation of the communications to Ss, opinion was significantly changed in the direction of the communication last heard (recency). The opposite or primacy effect was obtained when reward preceded communications for a group highly familiar with the issues. Nonsignificant order effects were obtained for treatment groups when competitive order effects were hypothesized.

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FIELD DEPENDENCY, AUTHORITARIANISM, AND
PERCEPTION OF THE HUMAN FIGURE*¹

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A. INTRODUCTION

The growing necessity for finding a suitable standard for legal and social judgments of what constitutes objectionable material in literature and the arts is complicated by the difficulty in measuring that which is based on social and cultural standards varying with the culture, the time, and the place.

In an attempt to make this problem amenable to scientific investigation, Eliasberg (1, 2) extracted from literary pornography, deliberately created as such by his psychiatric patients, a set of characteristics that were experimentally validated by Eliasberg and Stuart (3) and by Stuart and Eliasberg (7). The conclusions derived from these experiments are not only that there are specific and distinguishable characteristics that are applied by viewers in judging accepted works of great art as to their suitability for public exhibition, but that there is a significant relationship between personality rigidity and adverse judgments. This relationship transcends educational level, religious preference, and strongly favorable comments expressed by the experimenter.

The problem of the relationship between personality structure and perceptual modes has been investigated with the California F Scale (a measure of personality "set"), scores on which have been compared with scores on the Witkin's Embedded Figures Test, a measure of field dependency (5, 6). These studies report a significant relationship between personality rigidity and field dependency. Generally, they agree that man functions as an interdependent and interacting totality with his culture, even considering those whose main stimuli come from their own bodily sensations rather than from external forces.

In a variety of ways, Witkin *et al.* (10, 11) examined the hypothesis that visual approaches to an external field reflect basic individual psychodynamics. Eliasberg and Stuart, in the studies cited earlier (3, 8), found that Ss

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whose F Scale scores are comparatively high, viewing accepted works of great art from the collections of the Metropolitan Museum of Art and the Louvre give as their reasons for judgments the idea that these works are pornographic elements that have been extracted from the total composition. This result contrasts with that for *Ss* who score low on the F Scale, as the latter use the entire composition for their views that the works are not objectionable.

The problem seems to revolve around the relationship between personality structure and the pattern of perceptual sets. Are viewers of publicly accepted works of great art, when the subject is the female nude alone (in company with others or, as in some world-famous compositions, with one or more clothed males), significantly more field dependent if they also score high on the F Scale? Do such *Ss* see more pornography than low scorers?

Wertheim and Mednick (8) have reported a significant relationship between performance on the Embedded Figures Test (EFT) and need achievement. The higher the achievement motive, the greater the field independence. Witkin, Karp, and Goodenough (9) have found that alcoholics tend to manifest a higher degree of field dependency than nonalcoholic psychiatric patients. Jackson (4), in a study relevant to social autonomy and important to this study, found that resistance to field forces in perceptual situations is significantly correlated to resistance to social-field forces. All these studies suggest that *Ss* scoring high in the EFT and the F Scale should also be those who score high in the number of works of art judged pornographic.

B. METHOD

Two heterosexual groups of students attending separate colleges were given the California F Scale and Witkin's Embedded Figures Test (Short Form) and were asked to view and judge 13 examples of great art taken from the collection of the Metropolitan Museum of Art, New York City, and the Louvre.

One group of 12 men and 19 women (the men ranging in age from 18 to 24 and the women from 17 to 21) were attending college during the evening in a two-year vocational-studies curriculum leading to a diploma in subjects relating to the business world. The other group of 18 men and 24 women (the men ranging in age from 18 to 27 and the women from 17 to 21) were full-time students in a daytime liberal-arts curriculum.

Both groups were comparable in racial composition, religious preferences, and marital status (six students in each group were married). There was a difference in the range of ages between the groups. Females attending evening

school ranged in age from 16 to 46 (with a median at 18.5), while males attending evening school ranged in age from 17 to 36 (with a median at 22). The day-session group, for females as well as for males, ranged from 17 to 23 (with a median of 18 for the females and a median of 19 for the males).

All the day-session students were graduates of high schools in which they had taken academic courses; while (with five exceptions) the evening-session group had taken commercial (business) courses or what is known as a "general" course. The evening-session students merely presented a high-school diploma for entrance to their vocational-studies courses—an indication of the college's evaluation of the courses as being on a level that does not require the same preparation or intellectual capability as the liberal-arts program. In contrast, the "regular" students were specially selected by the college as having given evidence in their high-school average and College Entrance Board examinations as being within the top 20 per cent of their classes.

The EFT was administered individually to each *S*, while the F Scale was administered just prior to the judging of the works of art. Two-inch by two-inch slides of works by Manet, Picasso, Ingres, Modigliani, and others of similar stature were projected on a three-foot by three-foot screen to a mixed audience. Each picture was on view for one minute before the *Ss* were asked to make a judgment as to whether or not it was pornographic and to give the reasons for their decisions. Artists were not identified and the word "pornographic" was deliberately left undefined. Each *S* was identified by number only and this procedure was carried over to the EFT and to the F Scale.

C. RESULTS AND DISCUSSION

Table 1 shows the relationship between the several parts of this experiment and the two different educational levels differentiating the *Ss*.

Only a highly speculative analysis of these results appears to be possible. With the exception of judgments of pornography, the means for both groups on the tests are comparatively close. It appears that two things of importance are revealed. (*a*) There is a highly significant relationship between judgments of pornography and field dependency for the lesser educated (and less intelligent) group attending courses in small-business management, stenographic studies, and other applied subjects. (*b*) Higher education (intelligence or motivation) seems to be related to authoritarianism in judgments of pornography, but not necessarily to field dependency. The better-educated *Ss* made fewer judgments of pornography than the evening-session students and were comparatively less field dependent. It was the vocational-studies group that had

TABLE 1
MEANS AND PRODUCT-MOMENT CORRELATIONS FOR TWO GROUPS OF
SCORES ON THE EMBEDDED FIGURES TEST, THE F SCALE,
AND JUDGMENTS OF ACCEPTED WORKS OF ART

Variable	Vocational- studies students (<i>N</i> = 31)	Liberal- arts students (<i>N</i> = 42)
<i>Means</i>		
F Scale	106.64	96.71
Embedded Figures Test	11.82*	10.07*
Judgments	5.06	1.93
<i>Correlations</i>		
Judgments and scores on the F Scale	.17	.45**
Judgments and scores on the Embedded Figures Test	.44***	.05
Scores on the Embedded Figures Test and scores on the F Scale	— .08	— .06

* Minutes.

** Significant at the .05 level (.45 is significant at the .01 level, but the unrounded correlation was .448).

*** Significant at the .01 level.

strongly resisted authoritarian statements of the professor-experimenter (3) who had tried to shake their perceptions of what was objectionable when reviewing the same series of stimulus pictures.

Questions arise as to just what the EFT and the F Scale measure. Both appear to be concerned with differing dynamics. It had been assumed that dependency upon perceptual field forces would be associated with high conformity (4). This was not true of either group. There appears to be no linear relationship between these two factors and neither test appears to be measuring factors that have a similar psychodynamic base. However, for one group (that on the lower educational level and for which there was a significant relationship between field dependency and judgments of pornography) this may reflect the influence of mass culture. The resistance to this by the other group (in a more stimulating educational environment) may be the result of the contribution by the faculty in a liberal-arts curriculum—or so one would hope. Significantly, neither group shows any relationship between field dependency (EFT) and authoritarianism (F Scale).

Where do these results lead in this investigation of perceptual style, personality rigidity, and judgments of publicly accepted bodily presentations? Earlier studies of different modes of perceiving had indicated that people who had similar approaches to a perceptual field resembled one another in "... how they satisfied their needs, resolved their conflicts, handled their aggres-

sions and formed their attitudes." It follows, therefore, that field-dependent individuals are also highly rigid personalities (10, p. 8). These conclusions do not accord with the findings of this study.

During the administration of the EFT, it was noted that those Ss who later scored high on the F Scale had become "set" on one area of the field and could not break out of their concentration on an incorrect portion. It was not a "part" on which they had become fixated, but on the "whole" itself—there were no divisions or separate particles within their perceptual field. Like ruminative neurotics, they went compulsively round and round in a tightly compressed visual circle. Some became, so frustrated at their inability to abstract the correct form that they struck the table and showed other evidences of hostility. A few even became argumentative when refused credit for their incorrect perceptions. This behavior brings to mind the uses to which the Pintner-Patterson Form Board was put in the evaluation of the personalities of children and adolescents not so many years ago. Possibly, the EFT may be of value in much the same way.

D. CONCLUSIONS

For students who are not on the level of the liberal arts, it appears that judgments of pornography in evaluating great art containing female nudes is significantly related to field dependency. This group is more representative of the general population of students in New York City than the liberal-arts group. Judgments that the same examples of great art are objectionable, however, among the better-educated group, appear to be significantly related to authoritarianism, not to field dependency. In neither group is there a relationship between authoritarianism and field dependency.

These results do not confirm the hypothesis that field-dependent persons score highly on the F Scale. In addition, on the basis of the mean scores of both groups on the EFT, it appears that Ziegler's observation (12, p. 135) that there might be, "... a common relationship between all these scores (EFT) and general intelligence as defined by standard intelligence tests," is not substantiated, if it is valid to assume that liberal-arts students (on the average) have an intellectual capability significantly higher than that of the average vocational-studies student.

The results of the entire study emphasize the continuing need to consider as judges of controversial literary and artistic material only those whose "liberal" education has qualified them to act as such—not general intelligence, political affiliation, or racial, religious, or vocational preference.

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PERSONALITY AND ATTITUDINAL CORRELATES
OF PSYCHIATRIC-AID PERFORMANCE* 1, 2

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A. INTRODUCTION

The concept of the therapeutic community has enlarged the definition of what constitutes therapy for psychiatric patients. Many types of mental hospital personnel, it is recognized, contribute to therapy; and the concept of "ancillary" or "custodial" personnel is increasingly de-emphasized. The psychiatric aide or attendant, whose contact with the patient is the greatest of any professional or subprofessional employee, traditionally has had also the most custodial-like role.

In the present study, the authors sought to determine whether or not there are any significant relationships between the personality characteristics of aides and the adequacy of job performance, between attitudes toward mental patients and job performance, and between social-background factors and job performance. Under Levinson's conception (8), role performance was studied in relation to personality, ideology, and role conception. In the study, the authors sought to investigate an exhaustive number of relationships rather than to deal intensively with relatively few hypotheses. The very general hypothesis followed was that, since in the authors' institution therapeutic and benevolent personality attitudes and traits would be likely to be judged most desirable (7), a positive relationship would be found between these attitudes and ratings of role performance. Conversely, it was thought that a negative relationship would be found between custodial, authoritarian, and aggressive personality traits and attitudes and ratings of role performance.

Several efforts to select aides on the basis of personality tests have had

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varying results, most of them negative (1, 5). The prediction of tenure has been more successful, revealing important personality, attitudinal, and social characteristics of aides who remain on their jobs, as opposed to those who leave after a short time (2, 3). In an aide population studied by Gilbert and Levinson (6), role performance was shown to be related to custodial and humanistic attitudes.

B. METHOD

The present study related ratings of aide performance given by nurses and physicians to aide scores on Cohen and Struening's Opinions About Mental Illness Scale (4), the Edwards Personal Preference Schedule, the Leary Interpersonal Checklist, and the aides' own role conceptions.

1. Subjects

The major desire was to use aides who were known well enough to personnel to allow for reliable ratings. Accordingly, the sample was chosen by requesting 12 ward physicians who had been assigned to a building for at least one year to name those aides in their buildings whose performance they knew well enough to be able to rate. Through this procedure, the names of 42 female and 30 male aides were obtained.

This sample of subjects is not, of course, a random sample of any kind. The average age (38.4 years, $SD = 13.3$) and average years of service (6.99, $SD = 5.19$) probably exceed the means for all aides in the hospital. This sample might be a more adequate sample, but it is also a more custodially-oriented and security-oriented group than is usual, though these factors cannot be assessed in relation to other hospital aides. However, in exploratory work, the use of such a group seems defensible as a means of highlighting relationships that can be tested later for generality. In short, the opportunity to generalize was deliberately sacrificed in order to gain as much as possible in criterion stability.

2. Procedure

Once Ss were selected by ward physicians, the following information was obtained:

a. *Performance ratings.* Each building physician was asked to rank, according to two criteria, all of the aides from his building. "How valuable would you consider this aide to be in a ward in which you were understaffed with aides?" "How valuable would you consider this aide to be in a ward in which you were adequately staffed with aides and could use aides in any kind

of patient-oriented assignment?" Each physician's rankings were divided into thirds, so that each aide could be assigned a rating of 1, 2, or 3 (with the lowest number representing the most adequate aide).

Each aide was rated by his building physician on nine graphic-rating scales. The scales were defined as follows:

1. He takes time to talk with patients, listen to their problems, know their backgrounds, etc.
2. He is very good at observing patients' behavior and reporting it to other hospital personnel.
3. He is benignly protective and supporting of the patient, in the manner of a parent-child relationship.
4. He takes firm disciplinary responsibility for the patients in his care, so that they always know where they stand.
5. He takes supervision easily from nurses and physicians.
6. He has a good understanding of mental-hygiene principles.
7. He is conscientious about doing his work, prompt, and neat.
8. He is good at performing physical labor necessary to the maintenance of the ward.
9. He does well performing required medical ministrations.

Each scale had four points (very strongly present, strongly present, present, absent) separated by exponentially increasing distances going from the "present" to the "absent" end. One hoped, thereby, to encourage the use of the negative end of the scale.

Nursing Department supervisors performed a Q sort for the aides' total degree of adequacy in meeting the needs of patients and hospital administration. Two supervisors who were familiar with the male aides ranked the 30 males, and two supervisors who were familiar with the female aides ranked the 42 females.

b. Opinions About Mental Illness Scale (OMI). All Ss took Cohen and Struening's OMI Scale. Scores were obtained on the five factors A (authoritarianism), B (benevolence), C (mental-hygiene ideology), D (social restrictiveness), and E (interpersonal etiology).

c. Leary Interpersonal Checklist (ICL). The ICL was completed for self, ideal self, average aide, ideal aide, and average mental patient. In addition to the standard dominance (Dom) and love (Lov) scores for each person concept, the following deviation scores were calculated and analyzed on both the Dom and Lov dimensions: self — ideal self, self — average aide, self — patient, average aide — ideal aide, and average aide — patient.

d. Edwards Personal Preference Schedule (EPPS). The standard 15 personality needs measured by the EPPS were scored for each S.

e. Social variables. Sex, age, education, and years of service for each aide were obtained from the hospital personnel office.

f. Role conception. In an earlier study (7), 32 of the present sample of aides chose aide duties that they felt most important in an ideal situation. These duties were classified as janitorial, physical-custodial, behavior-custodial, information transmission, and therapeutic. A score for each aide was developed on the basis of the number of choices falling into the two categories of information transmission and therapeutic activities. These two categories were thought of as broadly therapeutic, as opposed to the more custodial activities represented by the other three categories.

3. Hypotheses

Previously, many aides throughout the hospital had been interviewed for another study, and cooperation was generally good (as encouraged by the nursing service and building physicians). Each aide was seen personally by a research assistant, the purpose of the project was explained, and detailed instructions were given for completing the test forms. Each aide completed the tests at his leisure and returned the forms directly to the psychologist.

Although many relationships were tested, specific hypotheses were as follows:

a. OMI Scale. Factors A and D correlate negatively with performance as rated by physicians and nurses; while Factors B, C, and E correlate positively inasmuch as humanistic goals are generally espoused at the institution.

b. ICL. As a result of two influences, Dom scores correlate negatively with performance ratings. First, there is common ground between the humanistic concept of patient care and the opposite of Dom: i.e., "submission," in Leary's terms. Second, there is thought to be high valuation of passive traits in the aide by other professional groups, though this is often at a covert or unconscious level.

Lov scores correlate positively with performance ratings because this variable also is conceptually similar to humanism as an approach to the treatment of mental patients. Also, the cooperative aspects of the aide who values the Lov variable in himself and others should make him more acceptable to physicians and nurses.

c. ICL difference scores. Discrepancy scores emphasizing differences between the patient and aides (self — patient and average aide — patient) are negatively correlated with performance because currently valued treatment philosophy minimizes the differences between the patient and the "normal."

d. EPPS. The following scales are positively correlated with performance ratings: deference, affiliation, intraception, abasement, and nurturance. The following scales are negatively correlated with performance: dominance, change, and aggression.

e. Role conception. Therapeutic role conception is positively related to performance ratings.

f. Ratings by physicians. Individual rating-scale judgments by physicians correlate positively with appropriate test dimensions: e.g., "benevolent protective support" and the OMI benevolence factor; "firm disciplinary responsibility" and dominance (as measured by the EPPS); and "firm disciplinary responsibility" and self-dominance (as measured on the ICL).

4. Reliability of Criterion Measures

Approximately one year after the original criterion judgments had been made, physicians were asked to repeat their ratings and rankings on the aides. Due to the resignations of several physicians, reratings were available on only 49 of the 72 aides. For the ranking in terms of desirability—in the "overstaffed" situation—the contingency coefficient calculated on the three-point scale is .52, as compared with a theoretical maximum of .80. For the nine graphic-rating scales, cells were combined to produce three-by-three matrices also having .80 as a maximum value for *C*. The coefficients vary from .47 to .58, with a median *C* value of .51; thus giving no occasion to speculate about differences among the reliabilities of the nine scales. The task of rerating after a full year probably put an overstringent requirement on the physician, as well as making the impossible demand that no relative change in adequacy among aides in a particular building occur within the elapsed year. Therefore, it seems legitimate to use the obtained ratings and rankings as criteria although their reliability may be lower than is desirable.

The two pairs of nursing supervisors reranked the aides in a Q-sort array about six months after their original rankings. For male aides, the correlation between initial and second rankings was .87; for female aides, it was .91. The lesser time between judgments and the greater familiarity of nurses with aides' performance were probably responsible for the clearly higher reliability of nurses' judgments.

C. RESULTS

1. Interrelationships Among Criterion Measures

Table 1 shows the correlations among the various criterion measures. The *r* between psychiatric rankings of aides in the "understaffed" situation and in the "overstaffed" situation is .83, high enough to suggest that the two rank-

ings measure approximately the same characteristic. Accordingly, the second of the rankings (i.e., the rankings in the "overstaffed" situation) will be used as the psychiatric-ranking criterion in the rest of the analysis inasmuch as the "overstaffed" condition implies an opportunity for a humanistic point of view to be exercised.

The distributions of ratings on the nine psychiatric-rating scales were highly skewed, notwithstanding the attempt to normalize them by "stretching" the "bad" end. Accordingly, tetrachoric correlation coefficients were calculated for all comparisons involving these ratings. The generally high inter-correlations among ratings imply that it would be difficult to support differential interpretation of the various traits. Each of the scales shows a high correlation with the psychiatric ranking.

Nurses' Q-sort rankings show a low positive correlation with psychiatric rankings (.25). Apparently, the judgments of psychiatrists and nurses are consensual to some degree, but large areas of differences exist.

When the nine psychiatric-rating scales are considered, the judgments of nurses are significantly related (at the .01 level, r_t) only to No. 1 (Listen to patients), No. 2 (Observe patients' behavior), and No. 6 (Mental-hygiene principles), though correlations falling just short of significance are noted in several other cases.

2. Relationships Between Test and Criterion Measures

Two approaches were used in the basic analyses of the data. First, the aide sample was divided into high-criterion and low-criterion groups, and these groups were compared on independent variables. Second, a correlation matrix was computed for the entire sample, the purpose being to explore all possible relationships.

a. Nurses' rankings. High-criterion and low-criterion groups were formed by eliminating the 24 middle-category aides from the nurses' Q sort, leaving 24 aides judged high in adequacy and 24 judged low. Through use of the t test, these groups were compared on the 44 independent variables. We found five significant t values, more than would be expected on a chance basis at the .05 level. All of these differences had been predicted in advance. Highly rated aides obtained higher scores than other aides in mental-hygiene ideology ($t = 1.66$, $df = 46$, $p < .05$). They had lower discrepancy scores between the patient and self ($t = 1.71$, $df = 46$, $p < .05$) and between the patient and the average aide ($t = 2.34$, $df = 46$, $p < .02$). They were higher in abasement on the EPPS ($t = 2.14$, $df = 46$, $p < .025$).

Pearson r 's were calculated between nurses' Q rankings and each inde-

TABLE 1
CORRELATIONS AMONG RATINGS

Rating	Rank (under- staffed)	Rank (over- staffed)	Listen to pa- tients	Observe patients' behavior	Benign support	Firm disci- pline	Takes super- vision	Mental- hygiene principles	Consci- entious, prompt	Phys- ical labor	Medical minis- tration
Rank (overstaffed)	83*										
Listen to patients	47	63									
Observe patients' behavior	70	79	60								
Benign support	49	56	52	54							
Firm discipline	63	54	30	80	40						
Takes supervision	59	60	38	43	30	42					
Mental-hygiene principles	78	73	50	82	36	70	56				
Conscientious, prompt	63	60	50	54	24	41	67	62			
Physical labor	46	46	39	40	20	32	60	50	74		
Medical ministration	58	53	39	46	24	52	51	51	70	78	
Nurses' Q Sort	40*	25*	57	50	32	19	22	50	30	14	30

* Pearson r . Unmarked values are tetrachoric r 's.

pendent variable for the entire sample of 72 aides. Of the 44 correlations, only two are significant at the .01 level. Therefore, it seems worthwhile to identify only the one relationship that was predicted and which both methods of analysis show to be significantly related to nurses' judgments: the abasement scale of the EPPS ($r = .32$, $df = 71$, $p < .01$). That is, those aides with high abasement needs tend to be judged as better aides. No relationships to social variables or to role conception were found.

b. Psychiatrists' rankings. High-criterion and low-criterion groups were formed by removing the middle group of aides from the psychiatrists' rankings (that is, the group labeled "2" after each psychiatrist's rankings were divided into thirds), leaving 27 "best" aides and 25 "poorest" aides. These two groups were compared, using t tests on the 44 variables. Three significant differences were found, two of them in the predicted directions. Highly rated aides are lower in authoritarianism ($t = 2.95$, $df = 50$, $p < .05$) and self-dominance ($t = 1.67$, $df = 50$, $p < .05$); but, contrary to prediction, they are lower in Lov, ideal self ($t = 2.12$, $df = 50$, $p < .05$, two-tailed test).

Significant correlations between psychiatrists' rankings and test scores also appear for two of the same test variables when all 72 cases are used. Psychiatrists rank more highly than others those aides who are less authoritarian ($r = -.34$, $df = 71$, $p < .01$) and those who describe their ideal selves as low in the Lov variable of the ICL ($r = -.26$, $df = 71$, $p < .05$). No relationships were found between psychiatrists' rankings and social variables or role conception.

c. Psychiatrists' ratings. Low-authoritarian attitudes on the OMI Scale are associated with good understanding of mental-hygiene principles ($r_t = -.31$, $z = 1.67$, $p < .05$); conscientiousness, neatness, and promptness ($r_t = -.36$, $z = 2.02$, $p < .05$); being good at physical labor ($r_t = -.43$, $z = 2.40$, $p < .01$); and being good at medical ministrations ($r_t = -.57$, $z = 3.18$, $p < .001$). All of the other rating scales have negative correlations with authoritarianism, though they do not reach required levels of significance. It seems probable that a generally positive psychiatric evaluation is associated with low judged authoritarianism.

Benevolence on the OMI is related to three psychiatric ratings: ability to take supervision easily ($r_t = .45$, $z = 2.40$, $p < .01$), being good at physical labor ($r_t = .43$, $z = 2.28$, $p < .02$), and being good at medical ministrations ($r_t = .33$, $z = 1.80$, $p < .05$).

The only other significant relationship between OMI factors and psychiatric ratings is the positive one between acceptance of interpersonal etiology and being rated good at listening to patients ($r_t = .32$, $z = 1.72$, $p < .05$).

There are three significant correlations between dominance scores on the ICL and psychiatric ratings. These are in the predicted directions. Subjects for whom high dominance is a desirable trait in their conceptions of ideal selves are rated as poor in ability to listen to patients ($r_t = -.35$, $z = 1.96$, $p < .05$), poor in ability to take supervision ($r_t = -.35$, $z = 1.96$, $p < .05$), and poor in ability to do physical labor ($r_t = -.35$, $z = 1.96$, $p < .05$). Those who see the average aide as being high in dominance are rated poor in taking disciplinary responsibility ($r_t = -.31$, $z = 1.67$, $p < .05$).

Two relationships between the Lov variables and psychiatric ratings are significant, but one of these is opposite to the prediction: namely, average-aide Lov and "firm disciplinary responsibility" ($r_t = -.46$, $z = 2.47$, $p < .02$). The other correlation, in the predicted direction, is that between average-patient Lov and "takes supervision easily" ($r_t = .31$, $z = 1.67$, $p < .05$).

Because only one of the correlations between ICL difference scores and psychiatric ratings is significant, no interpretation is in order.

Three correlations, out of 135, of EPPS needs with psychiatrists' ratings are significant; but only one of these was predicted. Therefore, no further note will be made of these relationships.

In the sample of 32 aides whose role conception was measured in terms of a high or low number of choices of therapeutic activities as most important, one of the nine psychiatric ratings shows a significant relationship to role conception. Aides who are judged good at performing medical ministrations are those who see their own roles as more therapeutic ($r_t = .67$, $z = 2.48$, $p < .01$). Inasmuch as there is a mild, but nonsignificant tendency for all nine psychiatric ratings to be positively associated with aides' own therapeutic role conception, this one significant correlation probably reflects the psychiatrists' general valuation of therapeutic attitudes *versus* custodial attitudes rather than reflecting anything specific about aides who do well in the medical aspects of their jobs.

Neither sex, age, education, or years of service bears any relationship to psychiatric ratings of adequacy of role performance.

D. DISCUSSION

The presence of relatively few test indices that are related to role performance measures raises a number of questions about the study, the instruments used, and ultimately about the relevance of attitudinal and personality characteristics to quality of job performance as an aide.

An explanation of the infrequent occurrence of significant relationships might be sought in the low reliability of the psychiatric ratings; yet the much more reliable nurses' ratings show few test correlates of judged performance.

Considerable error was undoubtedly introduced by giving to aides the task of completing test forms with relatively complicated directions and moderately high vocabulary level. In distributing and in collecting the tests, it was noted that there were frequent misunderstandings of the ICL and EPPS, as well as some resentment over being intellectually taxed by the completion of the forms. In contrast, the OMI elicited little resentment or misunderstanding and also produced more relationships to criteria than did the other two tests. Research instruments made for the specific purpose of eliciting personal and attitudinal characteristics of aides, such as those used by Pine (9), would seem preferable to the ready-made tests that were used.

An effort has been made to be conservative in interpreting scattered significant results, particularly if the relation had not been predicted. However, with the aforementioned sources of error in mind, some combing of the results for substantive meaning seems in order.

The major question is whether or not aides' work has requirements that are specific and sufficiently well-defined to be able to match with attitudes or personality characteristics. Gilbert and Levinson (6) demonstrated a moderate correlation between a Custodial Role Performance Scale and the CMI, suggesting that (when performance and ideology are defined by the same concepts) parallelism can be demonstrated. In the current study, however, performance was defined only in global evaluative terms (all psychiatric ratings being positively correlated). Thus, the only basis on which performance and ideology might be related lies in the possibility that the nurses and psychiatrists who provided the criteria used in their performance ratings concepts that are also reflected in ideological concepts about mental illness. Plainly, performance is a step further removed from ideology in the present study than it was in that by Gilbert and Levinson; therefore the relationships might be expected to be smaller.

Nevertheless, authoritarianism shows a consistently low, negative relationship to psychiatric judgments. The failure of nurses to value the nonauthoritarian aide may be noted in passing, though further confirmation should be sought before making any major interpretation of this difference between physicians and nurses. Benevolence also shows a tenuous relationship to some of the psychiatric ratings. The fact that all of these rating scales describe the most custodial-like and subservient aspects of the aide's job may or may not be a chance phenomenon. Other attitudinal factors show little or no relationship to performance. As the humanistic philosophy of patient care becomes more widely accepted at the aide level, it will become increasingly desirable to distinguish between the mere ability to voice a desirable attitude and the actual performance of the aide's job in a humanistic manner. It may be unreal-

istic to expect that expressed ideology can affect actual patient care beyond a certain point.

Beyond that point, one logically would expect that the personality of the employee would be the determining factor in the type of care the patient gets. Yet, generally, there has been little success in attempts to relate test measurements of personality to the prediction of success as an attendant. The results from the present study add some hope that such factors eventually may be identified. Thus, the suggestion is offered that valuation of dominance as a personality trait, particularly as evidenced by ideal-self ratings on the ICL, is associated with being rated as less adequate in job performance by physicians. An aide with too great a need to dominate would be inadequate in responding to the patient's needs and would interact in a destructive manner with the patient. In addition, one wonders whether (in spite of the espousal of liberal ideas regarding the increasingly important therapeutic work to be done by aides) physicians themselves have a habit of thinking of the "good" aide as one who complies easily and of the "bad" aide as one who asserts himself beyond the usual limits defined by the aide's traditional status. A similar tendency may be seen in the nurse's higher valuation of the aide whose abasement score is high.

The negative relationship of several of the ICL Lov scores to psychiatric-rating criteria is opposite to prediction. It had been thought that an overt tendency to value the compliant, dependent, and benevolent aspects of the self and significant others would have some counterpart in benevolent behavior toward patients that, in turn, would be noted and rated highly by nurses and physicians. One possible explanation for the reversal might be that the overtly cooperative picture implied by high-Lov scores may represent a defensive reaction formation against aggression (as in the typical description of the authoritarian personality), with corresponding antihumanistic behavior toward patients. Another possible explanation might be that the physician himself rejects the kind of person who values too highly the Lov variable because of his perception of hostility underlying the passive behavior or because the overcompliance is part of a general syndrome of inadequacy.

Finally, as predicted, the nurses rate more highly aides who see the patient as being higher in Lov and aides who see less discrepancy between themselves and the patient on the Lov variable. One concludes that the nurse raters value more highly positive attitudes toward the patient and attitudes minimizing the difference between patient and employee, and that they use these criteria in their ratings of aides. This result has some similarity to Pine's finding (9) that the more equalitarian aides tend to universalize in attributing personality characteristics to different groups (including the men-

tally ill), while authoritarians tend to ascribe traits differentially to groups.

The present study, like others preceding it, has added a relatively small amount of positive knowledge about desirable attitudes and traits in psychiatric aides. In the end, it seems likely that much of the difficulty is in the criterion. Knowledge about the needs of differing hospitals and of different wards in the same hospital leads one to realize that the criteria of "good" performance as an aide are diverse. What may appear to be laudable aide behavior toward patients to a research psychologist who is sold on the idea of the therapeutic community may be judged very differently by a nurse or physician who must deal every day with problems of discipline, ward cleanliness, and exploitative patient behavior. "Custodial" role performance may be appropriate in some ward situations and may be rated highly by professionals; while the same kind of aide behavior would be considered inadequate in a well-staffed, active-treatment ward. This interaction between demands of the ward and role performance ratings undoubtedly clouds criterion measurements.

It is suggested that future investigation test specifically the hypothesis that attitudes and traits associated with good role performance in wards with primarily custodial demands on the aide are different from the attitudes and traits associated with good role performance in wards with more therapeutic or humanistic demands.

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THE NEED SYSTEM OF COLLEGE STUDENTS*¹

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A. INTRODUCTION

Research findings on learning have given ample evidence that for learning to occur reinforcement, in most instances, must be present. Learning, therefore, does not generally take place through contiguity alone; but rather some form of reinforcement—some equivalent of reward or punishment—must be employed (5). However, because of the variation in individual motives, what is rewarding or punishing to one may be meaningless to another. Although each person is influenced in much the same manner by his physiological needs, it is the traditions of the group that point out the approved means of satisfying these needs. While animals can satisfy themselves directly, man can respond only in accord with the immediate situation and the strong influence of the mores of his particular society.

Through communication, the culture is passed on from individual to individual and from generation to generation, making both for differences and similarities among people. It is the parents who reflect the cultural patterns of society and who orient the child as to how to believe, how to feel, and how to act. Patterns of behavior, therefore, are predetermined for each individual, and any deviation from this role is punished by society. Thus, the individual is molded into conformity by the pressure that society brings to bear through his parents. Man's physiology, then, creates a universality of need states; but his varied cultural backgrounds make for differences in needs and methods of satisfying them. It is these very differences among individuals that causes reinforcement of learning to be such an erratic and often an ineffectual process. Nevertheless, the essential role of the college professor is to teach in the most effective and efficient manner. This purpose can best be accomplished with a knowledge of the goals of the student. By being cognizant of the fact that the individual's needs associated with learning may be based on motives for prestige, security, or recognition, reinforcement may be directed toward these areas; and the learning process enhanced.

The relationship between teacher and student can also act as a catalyst

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¹ The data for this study were collected at Temple University.

for learning. However, the heterogeneity among people creates a hiatus between them because of the lack of understanding of one another that frequently exists. Individuals tend to perceive the needs, wishes, and conflicts of others according to one's own traits; and such perception often results in misinterpretations of the behavior of others and in swelling the existing gulf. The teacher cannot afford to maintain this distance between himself and his students; therefore the understanding of others becomes especially meaningful for those in the teaching profession.

This study will attempt to broaden the understanding of individuals within diverse groups and to demonstrate how the needs of college students differ according to such variables as age, race, sex, marital status, and socioeconomic level.

B. METHOD

1. *Technique*

An established clinical procedure for understanding the needs, motives, and conflicts of an individual is an inquiry into his fantasy life (10).

Fantasy grows essentially out of mental images associated with need gratification. It is stimulated by frustrated desires, for in fantasy the person achieves his goals and gratifies his needs; although in substitute fashion (2).

When needs are being answered in the world of reality, there is little reason to daydream about them, but when needs are frustrated, their satisfaction will occupy much of the fantasy life (3, 9).

The method used in this study was to request that each *S* write his most frequent type of daydream and to give an example. Each *S* was also instructed to list his age, sex, race, marital status, and father's occupation. *S* was told not to write his name on his paper and was further assured of anonymity.

The daydreams were sorted according to the type of need that was being satisfied; and comparisons were made according to *Ss'* race, age, sex, and marital status. Socioeconomic level was determined by the occupation of the *S's* father according to a technique suggested by Bonner (1). However, because of the narrow distribution that resulted, it was not utilized except to describe the group as a whole.

2. *Subjects*

Students from seven psychology classes served as *Ss*. To attain a greater age range and more married *Ss*, three night classes were included among the

seven studied. The final sample² consisted of 181 males and 143 females. Of this group, 64 *Ss* were less than age 22; 102 were between 22 and 25; 77 fell between 26 and 32; and 79 of the *Ss* were over 32. With respect to racial groups, 272 *Ss* were Caucasian, 35 were Negro, and four were Oriental. There were 124 married *Ss*, 179 single *Ss*, and nine individuals who were separated or divorced. No *S* belonged to the upper social stratum. The majority of *Ss* were middle class, with 79 *Ss* falling into the upper-middle classification, and 163 in the lower-middle. Three *Ss* were in the lower-lower class, and 70 were in the upper-lower group.

C. RESULTS AND CONCLUSIONS

The *Ss* presented a wide variety of daydreams but, as might be predicted of a college sample, the most frequent fantasy was associated with some type of achievement.³ Of the 324 *Ss*, 39 per cent reported that achievement of some type was their most common daydream. However, the kinds of achievement motives varied with the individuals and with the groups studied. Table 1

TABLE 1
DISTRIBUTION OF ACHIEVEMENT FANTASY
(*N* = 324)

Achievement need	Per cent of <i>Ss</i>
Professional	54
Financial	26
Scholastic	16
Social	4

indicates the different success goals among those *Ss* who listed success as their most frequent fantasy activity.

If these findings are related to the individual's motivation for the attainment of a college education, learning appears to be a means to an end rather than an end in itself. Obtaining a degree represents the achievement of a level of professional, financial, or scholastic success that in turn seems to gratify the individual's needs for recognition, security, and prestige.

These specific needs, however, vary with the group studied. Age is one determining factor of the need value of financial reward as compared to scholastic reward. As age increases, financial motives become more important

² The number of *Ss* varies throughout this paper because complete data were not obtained from all *Ss*.

³ The per cents shown throughout this paper indicate the per cent of a particular group that indicated a fantasy as its most frequent fantasy. In Table 2, for example, the per cents are the per cents of *Ss* within the specific age group who listed financial or scholastic daydreams as the most frequent fantasy activity.

TABLE 2
THE RELATIONSHIP OF SUCCESS FANTASY TO AGE

Age	N	Financial	Fantasy	Scholastic
< 22	64	1%		13%
22-25	102	10%		6%
26-32	77	13%		4%
> 32	79	14%		1%

and scholastic needs become less meaningful. This relationship is shown in Table 2.

From these results, one might hypothesize that the younger student (who is less burdened with the responsibilities involved in supporting himself and a family) can direct his attention to the attainment of good grades rather than toward the financial benefits that later are to accrue from a college education. Moreover, more than anything else, grades inform the parents of the student's progress. Therefore, to obtain the continued financial support of parents and perhaps (more important) their recognition, *S* must be scholastically successful.

The older student is more likely than the younger student to be supporting himself and a family. This relationship between age and marital status is shown in Table 3. For older *Ss*, more practical considerations than good

TABLE 3
THE RELATIONSHIP OF MARITAL STATUS TO AGE

Age	N	Marital status	
		Married %	Single %
< 22	64	3	97
22-25	102	21	79
26-32	77	61	39
> 32	79	81	19

grades are involved. The attainment of a high scholastic average appears to be only a subgoal in the progress toward a college degree. Graduation seems to represent the attainment of a certain level of security and status that lessen everyday concerns and make the existence of the older student more secure.

The achievement needs of individuals also vary with sex. Males demonstrate more motivation for achievement than females. Forty-six per cent of the males indicated achievement as their most common daydream, while only 31 per cent of the women listed fantasies in this area. Results for women become more meaningful, however, when their needs are further analyzed. Of those females who listed achievement as their most frequent daydream,

14 per cent were interested in professional success; while 12 per cent were interested in financial achievement. In contrast, 23 per cent of the males emphasized professional success, as compared with six per cent interested in financial success.

The foregoing results suggest that males achieve status and prestige from the position that they attain in life. Although women living in a male-dominated society gain some status from their husband's professional attainments, they tend to achieve their prestige primarily from their financial situation. For the female, buying power is reflected in the clothes she wears, the house she lives in, and the car she drives. Prestige gratification is much more direct in this instance and is focused on her rather than on her husband.

A second hypothesis associated with the greater financial fantasies of female Ss is that they are more security conscious than males. Males appear to be motivated more than women toward attaining a degree of status. This sex difference is verified in part by the finding that eight per cent of the male Ss indicated obvious prestige daydreams as compared to three per cent of the females. It may well be, however, that both status and security play a role in the higher value placed by women on financial achievement.

When age and achievement fantasies are considered together, they vary inversely for the sexes. Males are less achievement oriented after age 32, while women become more motivated in this direction with advance in age. This relationship is shown in Table 4.

TABLE 4
THE RELATIONSHIP OF AGE AND SEX TO ACHIEVEMENT

Age	Male %	Female %
< 22	47	26
22-25	47	24
26-32	51	29
> 32	33	41

At the age of 32, males may be responding to the frustration of not having fully attained their goals. Growing fatigued by the struggle, they have relaxed their efforts and are motivated in other areas. In contrast, women who have satisfied their primary needs for marriage, home, and family can devote their time and energy to the accomplishment of their secondary goals—completing school and achieving a measure of success in the world. This hypothesis is strengthened by the finding that achievement fantasies for female Ss increase from 23 per cent to 40 per cent with marriage, while those for males remain at essentially the same level regardless of marital status.

It has been demonstrated that marital status, sex, and age are variables that modify an individual's need system. Further, the findings indicate that racial identification also may significantly affect motives. Negro students were found to have considerably higher achievement needs than the Caucasian students. Eighty-four per cent of the Negro students stated that achievement was their most frequent fantasy, but only 55 per cent of the white *Ss* made such claims.⁴ The high-achievement motives of the Negro *Ss* may be attributed to the years of frustration of their needs by American society. When needs are frustrated, an individual can respond by giving up and no longer attempting to gratify his needs or he may react with an intensification of need state. It is not unlikely that some Negroes have responded in the former manner to the many obstacles that have been placed in their paths. The Negro student, however, by his very entrance into college indicates his achievement motivation. From the results of this study, it seems probable that the Negro student's motivation in college is at a much higher level than that of his white counterpart.

Further investigation of the achievement needs of the races points up additional differences that exist. Table 5 shows a comparison between white and

TABLE 5
THE RELATIONSHIP OF RACE TO ACHIEVEMENT

Type of achievement	Caucasian %	Negro %
Professional	54	59
Financial	25	35
Scholastic	17	6
Social	4	0

Negro students who listed achievement as their most frequent fantasy. Professional and financial success were found to be more meaningful to the Negro *Ss* than were scholastic and social attainments. This result suggests the importance to the Negro of a permanent type of status and security. As stated previously, the years of frustration and deprivation apparently have intensified these needs, resulting in the drives becoming more powerful and more demanding of satisfaction. Although the attainment of financial goals represents the gratification of security needs, it may be hypothesized that financial success satisfies status motives to an even greater extent. The attainment of a certain level of financial success can be a constant and directly

⁴ The discrepancy between these statistics and those previously reported on achievement needs of the total population is accounted for by the fact that only part of the sample could be employed in this comparison. This was due to the fact that some *Ss* did not answer all of the questions.

communicable demonstration of status. It is communicated to almost all people and it is ever present. The individual's expensive possessions create a continuous counteraction to the feelings of insecurity and inadequacy fostered by the white majority on the Negro.

It should be noted that (in our sample) a high proportion of Negroes are in the lower socioeconomic levels. This relationship is shown in Table 6.

TABLE 6
THE RELATIONSHIP BETWEEN SOCIOECONOMIC LEVEL AND RACE

Socioeconomic level	Caucasian %	Negro %
Upper-upper	0	0
Lower-upper	0	0
Upper-middle	26	18
Lower-middle	55	18
Upper-lower	18	62
Lower-lower	1	0

This fact, however, does not alter the findings since this is true in the general population as well.

To meet the achievement needs of the college sample studied thus far, education appears to be a means to an end. The end varies with the group investigated. Apparently, both Negro and Caucasian *Ss* perceive college as a means of attaining status and security. For younger students, college is an opportunity for receiving parental and teacher approval. For a woman, college may represent the attainment of recognition from a husband and the gratification of needs that previously were less pressing than those for marriage and a family.

There was no evidence in any of the groups of a need for learning or education. It may well be that an investigation of fantasy does not tap this motive. However, it seems more likely that this need is secondary to those that were elicited.

Although a large per cent of the *Ss* gave evidence that their primary need was achievement, there were many who presented other motives. It may be that the achievement needs of the group studied were being satisfied and that their frustration lay in other directions. The needs indicated by the remainder of the sample, 61 per cent, are of a nature that cannot be answered in a classroom situation. The value of knowing them, therefore, does not lie in reinforcing learning; but rather in attaining a better understanding of the student and what motivates him.

The second most frequent daydream reported was associated with romance and marriage. Of the sample investigated, 18 per cent indicated that this was

their most common fantasy. Daydreams of marriage made up 12 per cent; and fantasy associated with love and romance, the other six per cent. As with achievement, differences occurred according to the specific group under consideration. Ten per cent of the Ss under 26 reported love and marriage as their most frequent fantasy, while only three per cent of the older Ss indicated this. However, as shown in Table 7, the results are influenced by the individual's marital status. The findings indicate that both age and marriage are effective in reducing these needs, while aging tends to reduce the drive. In both instances, the result is less fantasy in these areas.

TABLE 7
THE RELATION BETWEEN AGE AND MARITAL STATUS ON FANTASIES OF ROMANCE
AND MARRIAGE

Age	Single %	Married %
< 22	36	0
22-25	24	10
26-32	18	2
> 32	16	0

When males and females are compared, it is apparent that women tend to have greater romantic needs than men. Of the females in our sample, 28 per cent reported romance as their most common daydream; while only nine per cent of the males responded in this fashion. Although these fantasies were reduced with age in both males and females, women exceeded men at all age levels. Marriage fantasies followed much the same pattern, with women being consistently higher than males at all ages studied. As would be expected, marriage fantasies decreased with marriage in both sexes. The difference between the sexes is probably the result of society's stress on the role of woman as a love object, wife, and mother and de-emphasis on career orientation. In contrast, males have a greater variety of roles available to them, with the emphasis placed on achievement. Members of our society have very effectively learned their roles and just as effectively have learned the needs and incentives associated with them. The female, therefore, tends to have romantic needs; while the male has strong achievement motivation.

While fantasies of love and marriage vary in a predictable manner, sexual needs do not follow such a logical or consistent pattern. Comparisons among the six per cent of the total sample who indicated this area as their main daydream will now be examined.

Of the total male sample, nine per cent reported sexual daydreams, as compared to only two per cent of the female Ss. It is of interest to note

that this relationship is reversed when romantic fantasies are compared. Of the female Ss, 28 per cent indicated daydreams in this direction, as compared to only nine per cent of the male sample. Because of our double standard, it appears that sexual fantasies and needs are more acceptable to males than to females. The female S must answer her sexual needs, even in fantasy, in a more socially acceptable manner than is required of the male.

With advance in age the female Ss remained at approximately the same sexual fantasy level, while males demonstrated a gradual decline. These results are shown in Table 8. The reduction of sexual fantasies in the male

TABLE 8
THE RELATION BETWEEN AGE AND SEXUAL FANTASIES OF MALES AND FEMALES

Age	Male %	Female %
< 22	12	3
22-25	12	2
26-32	9	0
> 32	0	2

is in agreement with physiological findings that have indicated that sexual interests decrease with aging (8). For both males and females, these results also substantiate the work of Kinsey *et al.* They reported that "There is little evidence of any aging in the sexual capacities of the female until late in her life" (7). With males, however, a sexual peak was found to occur between the ages of 16 to 20 and was thereafter followed by a steady decline (6). The consistency of these findings may be a reflection of the universal effect of the physiology of the individual upon his functioning. The effects of marriage, however, alter this response. Of those Ss under age 26, eight per cent of the single individuals, in contrast with zero per cent of the married Ss, indicated that sexual fantasies were most prevalent. In the 26-and-older single group, sexual interest declined to five per cent. With the married Ss 26 and over, however, there was an increase in sexual fantasy to four per cent. It would appear that in marriage the sexual needs are gratified, thereby reducing fantasy in this area. With aging, however, the sexual drives of the married Ss did not decline (as was true with the single Ss); but instead these individuals demonstrated an increase in sexual daydreaming. This suggests that in the early years of marriage, sexual needs are satisfied and the individual does not have to seek drive reduction through fantasy activity. But, after a number of years of marriage, during which the marital partners have had maximum opportunity for sexual experience, gratification of sexual needs appears to grow less complete, forcing the individuals to

resort to daydreams for further need reduction. In all probability, such dreams revolve about sexual objects other than one's mate. Since fantasy can act only as a partial substitute for the actual satisfaction of sexual needs, it would be expected that there would also be an increase in extramarital relationships at this time. This increased sexual interest after a number of years of marriage can readily account for what popularly has been described as "the dangerous years" or the "seven-year itch."

With respect to race, 10 per cent of the white males reported sexual fantasies, as compared to zero per cent of the Negro male Ss. In contrast, five per cent of the Negro females daydreamed in this area, as compared with two per cent of the white females. These differences may be due to the fact that most of the Negro sample was drawn from a lower socioeconomic level at which sex does not have the same negative connotation as it does in the middle classes. Therefore, there is greater likelihood that these needs are satisfied in reality, and drive reduction through fantasy activity is not necessary for Negro males. It seems more likely, however, that the male Negro college students' intense need for success has resulted in a corresponding decrease in other drives. The female Negro, however, does not have the same strong need for achievement. Of this group, only 47 per cent reported achievement as their most frequent fantasy, as compared to 81 per cent of the male Negroes. Therefore, the Negro female is at approximately the same level of sexual-need state as the Caucasian female.

The findings on sexual fantasy life among the groups studied suggests that it is the culture of the individual that motivates and directs this need rather than his physiology. How important this drive is, what values the individual has concerning it, and how the need is gratified is determined by environmental pressures more than by internal physical demands. Thus, the traditions and values of our society and of the subgroups within it, create differences among individuals that in part are determined by such variables as age, race, sex, marital status, and socioeconomic level.

In studying the responses of single Ss, it was discovered that 13 per cent of the Negroes reported something about family as their most common daydream, in contrast to one per cent of the Caucasians. The strong needs of Negro Ss in the direction suggested may well be the result of what frequently has been reported as the unstable home environment of this group. Having needs for closeness, affection, and love frustrated could cause an intensification of need state in this area and the resulting attempt at satisfaction in the fantasy world.

The final daydream to be reported is related to travel, recreation, and the

acquisition of luxury possessions. In the sample investigated, 17 per cent listed these as the primary fantasy activity. However, such fantasy was mentioned considerably more often in *Ss* over age 32 than by other *Ss*. Twenty-two per cent of the *Ss* over 32 indicated that the fantasy under discussion was their most common fantasy, as compared to only four per cent of the younger *Ss*. It would appear that, with advance in age, achievement motivation declines and the individual wishes to enjoy the fruits of his labor. Acquisition rather than accomplishment and play instead of work become the primary goals for many people as they grow older.

D. DISCUSSION

Physical and psychological drives are activated when need deprivation occurs. In most instances, the greater the need state the more intense the motivation to satisfy the need. When needs cannot be gratified, indirect methods of drive reduction must be attempted. Daydreaming is one technique that is employed to attain partial need satisfaction. An awareness of an individual's fantasy activity, therefore, can lend insight into the frustration, desires, and motives of his everyday life.

Through the investigation of fantasy, this study has demonstrated that (although each individual is unique) a communality of needs exists within the subgroups of our society. It is the society itself, however, that indicates who belongs to each subgroup and also points out which needs, values, and goals are acceptable for the group to maintain. The individual, in turn, must learn his particular role or face the condemnation of society and the groups to which he belongs.

The results of this investigation further disclose that the *Ss* under study indeed learned their roles and the needs associated with them. Factors of age, race, sex, marital status, and socioeconomic level, which are signs of group identification, were found to be an highly important influence on the need system of the *Ss* studied.

The technique utilized to determine the relationship between fantasy and need was to examine the degree to which the daydream was present within the group. If a particular need was not in evidence in the *S's* fantasies, it was assumed that the need was being satisfied or that the individual had learned that such need was not acceptable. The latter was suggested as an explanation for the finding that female *Ss* had low sexual fantasies but high romantic fantasies as compared with male *Ss*. On the other hand, when there was evidence of a high degree of a specific type of daydream within a group, it was hypothesized that the group as a whole was being frustrated in this need.

The high-achievement motivation of the Negro *Ss* was assumed to be a result of the frustrations they have experienced.

Although this study pointed out these and other need patterns within the specific groups, it also demonstrated the manner in which society creates and frustrates needs. Fantasy, therefore, not only presents a picture of the individual, but of his culture and the larger society as well.

To some extent, generalizations from these findings can be made to similar individuals in the classroom. Knowledge of the frustrated needs of the student creates a clearer picture of the motivation and the incentives that propel his behavior. Moreover, this awareness of need states enables the teacher to employ the satisfaction of some of these needs as a technique to enhance the learning process. It should be emphasized, however, that reinforcement acts as a reward only inasmuch as a need state for a particular reward is present. If the need exists, course work can be presented as a bridge for the attainment of these particular goals. The learning and understanding of the class material would then function both as a motivation and reinforcement for learning.

Although it would be desirable for learning and understanding to be the goal of the educative process, the results of this study suggest that if these are needs within the individual, they act as lesser motives in the hierarchy of needs that are present. It is, however, of great importance to stimulate in our society the need for learning and understanding. Only when this has been accomplished can learning act as its own motivation and reward rather than as an obstacle to overcome to achieve some distant and perhaps unrelated goals.

E. SUMMARY

This study was an attempt to determine how the needs of college students differ with respect to such variables as age, sex, race, marital status, and socioeconomic level. The clinical technique of studying fantasy was employed to learn the primary needs of the individual.

Although achievement motivation was the most frequent daydream reported, the specific type of success motive varied with the group under study. Younger students were found to be more oriented toward the attainment of good grades, while older *Ss* were motivated toward professional and financial attainments. Women, though generally less achievement directed than men, were more concerned about financial success; and males more than women were interested in professional achievements. With age, however, the female *Ss* demonstrated an increased motivation in achievement; while the

males declined in this area. Negro Ss were more strongly motivated toward success than the Caucasians, but showed a lesser drive toward social or scholastic attainments and an emphasis on professional and financial accomplishments.

A second area of fantasy activity that was frequently reported was associated with needs for love and marriage. These were found most frequently among the females, younger Ss, and single individuals. Related to this, sexual daydreams were most often indicated by the younger single Ss and by older married Ss. White males reported more sexual fantasy than did the Negro males, but the females of both groups were at approximately the same level.

Other daydreams that were commonly reported were associated with the general area of recreation and acquisition of luxury possessions. This fantasy was most often found among older Ss. A final fantasy frequently presented had to do with family. In this area, single Negroes were considerably more motivated than single white Ss.

Each fantasy was studied and hypotheses were presented regarding the need the daydream satisfied and the motivation for the existence of the need itself. Further suppositions were made concerning the reasons for the differences among the needs of the various groups.

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MEASUREMENT OF GROUP EFFECTIVENESS IN NATURAL ISOLATED GROUPS*¹

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A. INTRODUCTION

Prolonged isolation in a restricted environment places unusual stresses upon small groups. The specific effects of such stresses upon group cooperation and efficiency over long periods are largely unknown.

The study of interpersonal relations and performance in natural closed groups has been seriously handicapped by lack of operationally defined concepts, practical measurement techniques, and opportunities to apply them repeatedly. Most efforts to measure group interaction and effectiveness have taken place in laboratory or short-term field situations that do not take into account changes in group processes as a function of time. This shortcoming becomes critical when a major focus of interest is the ability of groups to maintain positive social attitudes and effective work behaviors over extended periods of time.

The present report describes the development of a set of attitude measures designed to reflect individual reactions to and satisfaction with Antarctic station life and to assess several aspects of group interpersonal relationships and work effectiveness. These measures were applied to small groups of scientists and Navy personnel living and working in complete physical isolation for approximately 12 months at scientific stations on the Antarctic continent. By means of these attitude measures, the reactions of nine groups to the privations of long-term isolation and confinement were assessed at two time periods. Group differences on the attitude measures were related to an independent criterion of group effectiveness.

During and since the International Geophysical Year of 1957-1958, the United States has maintained several year-round stations on the Antarctic continent to implement the Antarctic Research Program supported by the National Science Foundation and the United States Navy. Civilian scientists

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and technicians collected research data, while Navy personnel provided necessary logistic support. Groups varying from 15 to 40 men lived and worked together in close association for approximately a year. From seven to nine months, all stations were completely isolated from each other and the outside world, except for intermittent radio communication. There was no possible way for members to leave the station nor for help to reach them during the isolation period.

The physical setting of the Antarctic stations undoubtedly is the most rugged environment inhabited by man. Temperatures below -100 degrees Fahrenheit have been recorded, winds of more than 100 miles per hour may prevail, and altitudes range up to nearly 10,000 feet above sea level at the Amundsen-Scott South Pole Station. During the Antarctic summer months (when sunlight is nearly continuous), construction, repair, and storage tasks must be performed at every station in addition to the collection of scientific data. These tasks must be accomplished if the group is to survive the savage onslaughts of Antarctic winter. With the advent of the winter season, a period that varies from approximately three to six months of continuous darkness (depending upon geographical location), the men are forced indoors for all of their activities. For the remainder of the long winter, the men live and work together in virtual confinement with no possibility of evacuation or of additional supplies.

Men are selected for Antarctic assignments initially on the basis of competence in an occupational specialty. All applicants also are subjected to thorough physical and psychiatric examinations. Since each station must be a completely self-sustaining community for many months, a variety of scientific, technical, and military occupations, such as glaciologist, ionospheric physicist, meteorologist, electronics technician, physician, mechanic, and cook, are represented.

B. METHOD

On two occasions attitude questionnaires were administered to a number of Navy-scientist groups from three expeditions which wintered in the Antarctic.² In the first two expeditions, questionnaires contained 119 items to assess living conditions, motivational states, feelings of personal usefulness, quality of relationships among group members, and group productivity or effectiveness. Responses were given on continuous five-category rating scales. As the authors wished to delineate and measure a number of attitude areas, homoge-

² The questionnaires were the Attitude Study and Group Behavior Description constructed by Herbert Zimmer, 1957.

TABLE 1
DESCRIPTORS OF ATTITUDE-SCALE CLUSTERS

Cluster	Item-Total Correlation ^a
<i>Physical Adjustment</i> : degree of adjustment to climatic and living conditions.	
Does your Arctic clothing tire you out quickly?	.54
Does your Arctic clothing interfere with the performance of your job?	.53
<i>Motivation</i> : interest in remaining or returning on Antarctic expedition.	
Do you wish you had never come to the Antarctic?	.69
Would you like to go on another Arctic or Antarctic expedition after you return from this one?	.69
<i>Usefulness</i> : feeling that job is important and that personal gain will be derived from participation.	
Do you think your mission is important enough to justify your spending all this time in the Antarctic?	.69
How much of the knowledge and experience you gain on this Antarctic expedition do you think you will be able to use in one form or another after you return?	.68
<i>Boredom</i> : lacking things to do, time dragging.	
Do you find yourself in need of something to do in your spare time?	.59
Are you bored?	.59
<i>Compatibility</i> : perception of group members as mutually congenial and preferred as personal friends.	
The members of my group are the kind of people I like to spend a lot of time with.	.57
There is a pretty good feeling between us here.	.57
<i>Teamwork</i> : perception of group members as cooperative and each carrying his share of the work.	
Members of this group work well together as a team.	.69
Everybody pulls together to get a job done.	.68
<i>Efficiency</i> : perception of group as well organized, having definite goals and scheduled activities.	
This group is confused and disorganized.	.63
Everything we do is planned well ahead of time.	.61
<i>Achievement</i> : perception of group accomplishment and members' pride in same.	
We take a lot of pride in what this group has been able to achieve.	.70
This group does not accomplish much.	.68
<i>Egalitarian Atmosphere</i> : perception of mutual respect, status leveling, and democratic procedures within group.	
Everyone here can have his say.	.48
The group as a whole makes important decisions.	.47

^aEstimated from each item's correlation with other items in cluster.

neous clusters of items were derived for study. As described later in the Test Administrations Section, scales were revised for use in the third expedition.

To form attitude clusters, one of the authors grouped all items by similarity of content or reference. Items that did not appear to cluster were dropped. Ten item clusters were formed and each was given a descriptive label. The second author then assigned each questionnaire item to one of the named clusters, omitting those items that were unrelated to any cluster. Eighty-

four per cent agreement was achieved by the two authors in assigning items to clusters.

For both test administrations, all original 119 items were intercorrelated. Based on these data as well as the *a priori* clusters derived by the authors, nine attitude clusters (consisting of a total of 72 items) were finally accepted for use in the present study and were given designations as follows: Physical Adjustment, Motivation, Usefulness, and Boredom (in each instance, reference is to individual adjustment); and Compatibility, Teamwork, Efficiency, Achievement, and Egalitarian Atmosphere (in each instance, reference is to group relationships and effectiveness).

Table 1 provides brief descriptions of the nine scales and for each scale lists the two items correlating most highly with that scale. Other items in the scales are similar to the examples given.

C. SUBJECTS

Nine groups from three Antarctic expeditions were chosen for study. Groups ranged in size from 14 to 40, and the average size was 28 men.

The average composition of groups was as follows: 58 per cent Navy enlisted men, seven per cent officers, and 35 per cent civilian technicians and scientists. Mean age and years of job experience were 27 and 7, respectively.

D. TEST ADMINISTRATIONS

Stations, scales, and testing times were the same for Expeditions I and II. The nine scales described in Table 1 were administered twice during the year to three groups in each of two expeditions. Questionnaires were given at midwinter, after three to four months of isolation and restricted activity, and again at the end of winter, several months later, when limited outdoor activities had been resumed.

In Expedition III the first testing was accomplished at the early winter period, after one to two months of isolation, rather than at midwinter. The second administration was at the end of winter. Because the staggering difficulties of data collection in the Antarctic dictated a reduction wherever possible in the length of questionnaires, the attitude questionnaire was revised and shortened prior to the testing in Expedition III. Generally, items that correlated highly with total scores were retained; others were dropped or replaced with items known to correlate highly with that cluster.

Internal consistency estimates, test-retest reliabilities, and intercorrelations for the original and revised scales are shown in Table 2. Generally, the nine revised scales were comparable to their original counterparts. An exception

was the revised Usefulness Scale which had lowered correlations with other scales and lowered internal consistency. Test-retest reliabilities were generally lower for Expedition III, perhaps because of the longer time interval between testings.

Through information available from official reports, supervisors' records, assessments by psychiatric teams at the sites, and postexpedition interviews with members and station leaders, it was possible to identify the least effective group in each expedition. The principal identifying characteristics of least effective stations were persistent difficulties in keeping essential station equipment operating, reports by station leaders of repeated open conflicts between group members, or low motivation and morale reported at the end of the year by observers at the scene. Groups classified as least effective from independent reports were Group C of Expedition I, Group F of Expedition II, and Group G of Expedition III.

Data from Expeditions I and II were analyzed first as a unit. It was then intended that data from Expedition III would be evaluated in the light of the earlier findings. The assumption was that if the results from Expeditions I and II could be replicated under the modified conditions of Expedition III, more confidence could be placed in the generality of the findings.

E. RESULTS

Significance of changes in means were evaluated by the *t* technique for correlated means (1); so only those subjects who were tested on both occasions were utilized for this analysis. Changes in variance were evaluated using the *t* technique for correlated variances, as suggested by McNemar.³

Of the nine attitude scales, the Compatibility Scale (which was designed to measure affective or social relationships among group members) and the Achievement Scale (which was designed to measure group accomplishment) most frequently showed significant changes from early winter or midwinter to the end of winter. Six of the nine groups showed significant changes in mean scores on these two scales. Four groups changed significantly on the Teamwork and Egalitarian Atmosphere Scales; and three groups, on the Efficiency and Usefulness Scales. The Motivation, Boredom, and Physical Adjustment Scales evidenced one or no significant changes.

In general, mean scores for the four measures reflecting individual status

³ Scale means and standard deviations for all respondents at each test administration, as well as significant changes in means and variances, are presented in tables deposited with the American Documentation Institute. Order Document No. 8485, remitting \$1.25 for 35-mm. microfilm or \$1.25 for 6-by-8 inch photocopies.

remained homogeneous during prolonged isolation; while one or more measures reflecting group status varied significantly over time for almost all of the nine groups. These consistent attitude changes in the group-status measures indicated that, toward the end of the long winter, deterioration of group cooperation and accomplishment typically, but not necessarily, occurred.

There were few significant changes in variance from first to second test administrations. Slight but consistent trends toward increased variance occurred for certain scales and groups, but over the two test periods, the attitude measures were relatively homogeneous with respect to variance.

Comparisons of less effective groups with relatively effective ones for the end-of-winter test administration are shown in Table 3. For each of the nine attitude measures, the t values and significance levels for differences between the least effective group and the other two groups in each expedition are indicated.

The Teamwork, Efficiency, Achievement, and Egalitarian Scales consistently discriminated between least effective and other groups, showing at

TABLE 2
INTERCORRELATIONS AND RELIABILITIES OF ORIGINAL AND REVISED ATTITUDE SCALES

Attitude scales	1	2	3	4	5	6	7	8	9	Edition
1 Physical Adjustment		37 ^a	27	-10	21	16	09	07	12	Original
		16 ^a	05	-34	04	16	13	10	13	Revised
2 Motivation			59	-30	30	24	12	14	27	Original
			50	-28	17	07	05	15	32	Revised
3 Usefulness				-38	38	32	24	34	35	Original
				-25	14	-06	06	22	14	Revised
4 Boredom					-29	-29	-14	-20	-20	Original
					-02	-05	-13	-09	-04	Revised
5 Compatibility						78	55	64	57	Original
						70	38	61	41	Revised
6 Teamwork							62	74	57	Original
							60	60	51	Revised
7 Efficiency								64	21	Original
								60	58	Revised
8 Achievement									27	Original
									49	Revised
9 Egalitarian Atmosphere										
			<i>Internal Consistency</i>							
Original	70 ^b	84	82	70	85	82	74	78	64	
Revised	53 ^b	81	46	63	84	80	67	88	75	
			<i>Test-retest Reliability</i>							
Original	71	81	71	51	55	51	58	54	55	
Revised	62	71	54	61	55	29	51	38	36	

* Averaged product-moment correlations from two administrations. Decimal points are omitted.

^b Coefficients from the generalized Spearman-Brown formula based upon average item intercorrelations were averaged over the two administrations.

TABLE 3
DIFFERENCES BETWEEN LEAST EFFECTIVE AND OTHER GROUPS BY THE *t*-TECHNIQUE^a

Scale	Expedition I		Expedition II		Expedition III	
	Group	Group	Group	Group	Group	Group
	C	C	F	F	G	G
	versus	versus	versus	versus	versus	versus
	Group	Group	Group	Group	Group	Group
	A	B	D	E	H	I
	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>
Physical						
Adjustment	-1.79 ^b	— .18	.03	1.71	1.71	1.26
Motivation	5.96**	4.53**	.57	.08	-2.04*	— .89
Usefulness	4.99**	5.89**	1.82	.15	— .06	-1.82
Boredom	1.86	1.52	4.27**	2.98**	1.04	.72
Compatibility	.41	2.03*	3.29**	1.21	4.11**	.12
Teamwork	— .45	4.25**	5.01**	3.33**	3.30**	2.36*
Efficiency	-1.07	3.38**	4.47**	4.39**	2.67**	3.35**
Achievement	— .38	5.38**	4.40**	2.61*	2.70**	1.86
Egalitarian Atmosphere	3.30**	1.85	3.04**	.05	2.09*	3.82**

* Significant at the .05 level.

** Significant at the .01 level.

^a Probabilities for all comparisons are based upon two-tailed tests.

^b Minus signs indicate that the difference was in a favorable direction.

least one highly significant difference between means in each of the three expeditions. The Compatibility Scale discriminated for one of the two comparisons in each expedition. Usefulness discriminated only for both comparisons of Expedition I, while Boredom discriminated only for both comparisons of Expedition II. Motivation discriminated for both comparisons in Expedition I, but discriminated in the opposite direction for one comparison in Expedition III. Physical Adjustment did not discriminate for any of the six comparisons.

F. DISCUSSION

The measurement of group effectiveness in isolated natural settings presents obvious methodological and practical difficulties. What constitutes effective group performance? How can differences in effectiveness among groups best be measured?

Fortunately, gross breakdowns in group organization, integration, and cooperation have been so rare in Antarctic groups that such critical incidents do not provide a generally useful criterion on which to differentiate group performance. It has been difficult to assess the extent to which Antarctic groups have fulfilled predetermined goals and have generated and accomplished other goals spontaneously. It is usually not known in advance how much a group

will be required to accomplish except in a broad sense. The fact that unpredicted natural events can disrupt achievement efforts, and the fact that projects and physical settings differ from group to group make it difficult to establish common standards for all groups. In addition, group adaptation and performance are recognized as continuing and varying processes. Based on sources of data external to the group, only gross distinctions have been possible thus far where a combination of circumstances has clearly pointed to relatively inferior group accomplishment.

Undeniably, it would be very helpful to have objective indicators of group productivity in natural isolated work groups. It seems unlikely, however, that many such indices will become readily available in the near future. The authors take the position that until more precise ways of gauging group productivity can be developed, by far the most useful estimates of overall group performance will be obtained from knowledgeable participants in the group enterprise. The only available source of information concerning the group's performance over the entire year is the station membership itself. Furthermore, it seems reasonable that station members are as capable as anyone of observing whether or not a group is friendly, cooperative, or efficient. An attitude inventory or questionnaire is not, of course, a new technique for obtaining this type of information. Questionnaire evaluations are used extensively in industrial, military, and laboratory settings to obtain relevant information about group behavior.

A great deal of research will be required to identify those personal characteristics of group members, leadership practices, and manipulatable environmental conditions that will make possible reasonably accurate prediction of small-group adaptation and performance in isolated or stressful settings. The present study may have contributed toward the development of simple measures of important dependent variables, a development that appears to be a necessary step in advancing the foregoing aims.

In this study, Antarctic groups exposed to long-term isolation from the outside world clearly evidenced measurable deterioration in their social relationships and work effectiveness during the latter part of their confinement. Measures of individual adjustment and satisfaction did not consistently show a similar decline.

Seaton (2), utilizing the same five group-status measures employed in this study, reported similar deterioration of affective relationships in Army teams exposed to short-term hunger deprivation while temporarily isolated on the Greenland Icecap. Formal organization, social control, and mutual support also declined. Seaton suggested that these changes were conse-

quences of social withdrawal or restriction of relationships to fewer persons rather than the results of changes in the individual's attitudes toward others or the task.

Torrance (3) observed typical changes in sociometric structure under the stress of survival training. Social structures progressed from formal structures to informal structures to no structure.

Under the conditions of long-term restrictions in physical activity and social stimulation experienced in Antarctic groups, maintenance of group organization, harmony, and efficiency presents a manifestly difficult problem. The rigors and privations of Antarctic small-station life appear to demand extraordinary personal qualities and leadership abilities in the participants and to justify fully efforts to select highly qualified members. Research also is needed to identify organizational and environmental supports that can help overcome the stressful and debilitating effects of prolonged group isolation and confinement.

G. SUMMARY

The systematic study of interpersonal relations and productivity in natural isolated groups requires measurement techniques that are practicable for administration in groups operating under variable or extreme environmental conditions. In the present study, simple questionnaire scales designed to measure group cooperation and effectiveness demonstrated acceptable reliability and were shown to relate consistently to an independent criterion of group effectiveness. Significant changes in social relations and group accomplishment were recorded in several of the Antarctic groups studied.

Maintenance of group organization, harmony, and efficiency under conditions of long-term isolation and confinement, such as exist at Antarctic stations, appears to be a very difficult but not an impossible task.

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AUTHORITARIANISM AND RESPONSE TO ATTITUDE SIMILARITY-DISSIMILARITY*¹

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A. INTRODUCTION

In a number of investigations (2, 4, 5, 6, 8, 9), attraction toward a stranger consistently has been found to be a function of the degree of similarity of that stranger's attitudes to those of the subject. The expression of similar attitudes has been conceptualized as a rewarding interaction in that similarity provides consensual validation. The expression of dissimilar attitudes, on the other hand, results in a punishing interaction in that dissimilarity provides consensual invalidation. Subjects respond positively to strangers who administer validation rewards and negatively to strangers who administer invalidation punishments.

A relatively powerful stimulus variable, such as attitude similarity-dissimilarity expressed by a stranger, would be expected differentially to affect individuals who differ in personality structure. For example, it has been found (3, 4) that the need for affiliation influences attraction responses. Individuals drawn from the middle range of a distribution of need-affiliation scores respond more positively to agreeing strangers and more negatively to disagreeing strangers than do individuals scoring at the high or low need-affiliation extremes. In the present investigation, the effects of authoritarianism (1) on response to the similarity-dissimilarity variable are explored.

Included in the authoritarian syndrome are a number of characteristics that suggest that those high on the F Scale are relatively rigid and dogmatic with respect to the opinions and beliefs that they hold and are relatively insecure about (and threatened by) the possibility of being incorrect. It would be expected, therefore, that various attitudes held by authoritarian individuals are rigidly structured into dichotomies of right and wrong, truth and falsehood, proper and improper. Further, disagreement on the

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part of others about various topics should create an ambiguous and threatening situation that the authoritarian would be expected to resolve by rejecting the holder of dissident opinions. On the other hand, individuals low in authoritarianism should be much more flexible in the attitudes they hold, more tolerant of and less threatened by the possibility of being incorrect, and less likely to reject another individual because he expresses dissimilar opinions.

On the basis of these propositions, it is hypothesized that attraction toward a stranger is an interactive function of attitude similarity-dissimilarity and authoritarianism. Specifically, it is hypothesized that, as the proportion of a stranger's dissimilar attitudes increases, high authoritarians respond to him more negatively than do low authoritarians.

B. METHOD

The California F Scale was given to several sections of the introductory-psychology class at the University of Texas. The instrument used was a 16-item scale consisting of the original items that yielded the highest discriminatory power indices with the total score (7). Items were scored on a five-point scale of agree-disagree. From the total pool of subjects, high-authoritarian and low-authoritarian groups were selected for the experiment. The former consisted of 80 subjects (45 males, 35 females) with F Scale scores ranging from 33 to 51, with a mean of 38.10. Low authoritarians consisted of 80 subjects (42 males, 38 females) with F Scale scores ranging from 11 to 30, with a mean of 24.81.

A different experimenter administered a seven-item attitude scale to the original pool of subjects. This scale, which has been described in earlier work (4, 5), deals with undergraduates getting married, smoking, integration in public schools, drinking, money as a goal in life, the university grading system, and political preference.

In the experimental session, several weeks after the administration of the two scales, each subject was asked to make a number of judgments about an anonymous stranger on the basis of latter's responses to the seven-item attitude scale. As in previous investigations, the subjects were told that they were taking part in a study of the ability to make judgments about others on the basis of a limited amount of information. They were told that they would be given an attitude scale completed by someone of the same sex as themselves. They were asked to read the answers carefully and to try to form an opinion about the other person. After studying the responses of the anonymous stranger, they completed the Interpersonal Judgment Scale. This instrument consists of six seven-point rating scales dealing with an evaluation

of the stranger's intelligence, knowledge of current events, morality, and adjustment, plus two attraction scales dealing with liking of the other person and the extent to which the subject would enjoy working with him as a partner in an experiment. The latter two scales constitute the measures of the dependent variable.

Actually, the "strangers" to whom the subjects responded were spurious in that the anonymous attitude scales were completed by the experimenter. The subjects were divided into eight experimental groups. For the first group (7-0), the responses of the nonexistent stranger on the attitude scale corresponded exactly with those of each subject on all seven issues. For the second group (6-1), the stranger's responses were like those of each subject on six issues and dissimilar on one (the specific item of dissimilarity was varied across subjects). For the third group (5-2), there was similarity on five issues and dissimilarity on two, etc. For the eighth group (0-7), the stranger was dissimilar on all seven issues. In each instance, a "dissimilar" response was a mirror image of the subject's own response; for example, if the subject had a slight preference for the Democratic Party, the stranger had a slight preference for the Republican Party.

C. RESULTS

To keep the data consistent with those of previous studies, adjacent experimental groups were combined to make a total of four conditions rather than eight. Each cell contains 20 subjects. For each measure of attraction, the means and standard deviations are shown in Table 1 for the high-authoritarian and low-authoritarian groups in the four experimental conditions. Two-

TABLE 1
MEANS AND STANDARD DEVIATIONS ON THE ATTRACTION SCALES OF HIGH-AUTHORITARIAN AND LOW-AUTHORITARIAN SUBJECTS RESPONDING TO FOUR LEVELS OF ATTITUDE SIMILARITY

F Score	7-0 and 6-1		Similarity-Dissimilarity				1-6 and 0-7		Total	
	M	SD	5-2 and 4-3	M	SD	3-4 and 2-5	M	SD	M	SD
<i>The "Liking" Variable</i>										
High	6.15	.66	5.50	1.02	4.65	1.28	4.60	1.59	5.22	1.35
Low	6.05	1.07	4.85	1.42	5.00	1.58	3.80	1.33	4.92	1.58
Total	6.10	.89	5.18	1.28	4.82	1.45	4.20	1.52		
<i>The Work-Partner Variable</i>										
High	6.15	.85	5.40	.97	4.75	1.30	4.50	1.47	5.20	1.34
Low	5.75	1.14	5.15	1.20	4.80	1.21	3.95	1.20	4.91	1.35
Total	5.96	1.02	5.28	1.10	4.78	1.25	4.22	1.37		

TABLE 2
SUMMARY OF ANALYSES OF VARIANCE OF EFFECTS OF ATTITUDE SIMILARITY AND
AUTHORITARIANISM ON ATTRACTION

Source	df	Variable			
		Liking		Work-partner	
		Mean square	F	Mean square	F
Attitude similarity	3	25.18	14.72*	21.56	14.77*
Authoritarianism	1	3.60	2.10	3.30	2.26
Interaction	3	2.78	1.62	.66	.45
Error	152	1.71		1.46	

* $p < .001$.

way analyses of variance were applied to the data for each dependent variable.² The summary of the analyses is shown in Table 2. For both the "liking" variable and the work-partner variable, the main effect of attitude similarity is significant beyond the .001 level. However, neither the authoritarianism variable nor the hypothesized interaction between authoritarianism and similarity-dissimilarity was found to have a significant effect on attraction ratings.

An additional correlational analysis was also carried out in which relationships between the independent variable (attitude similarity) and the dependent variable (attraction ratings) were determined separately for high-authoritarian and low-authoritarian groups. As may be seen in Table 3, there is a significant correlation between number of similar attitudes held by the stranger and the subject's attraction ratings for both authoritarian groups. As in the analyses of variance, the importance of the similarity-dissimilarity variable is shown, but there is no differential effect on individuals who differ in authoritarianism.

TABLE 3
CORRELATIONS BETWEEN NUMBER OF SIMILAR ATTITUDES AND ATTRACTION RATINGS

F Score	Variable	
	Liking	Work-partner
High	.45*	.47*
Low	.48*	.49*

* $p < .001$.

² Before computing the analyses of variance, Hartley's maximum F ratio test for heterogeneity of variance (10) was determined even though recent investigations (11) have shown that departure from homogeneity has little influence upon the power function. For the "liking" variable, a significant departure from homogeneity was found. For that variable, analysis was carried out on the basis of both raw and transformed data. Since identical results were obtained in the two analyses with respect to significance of F s, only the analysis based on the raw data is presented here.

D. DISCUSSION

The finding that attraction responses vary as a function of the proportion of similar attitudes to dissimilar attitudes held by a stranger is simply another confirmation of a relatively well-established relationship. The disconfirmation of the hypotheses regarding differential effects of similarity-dissimilarity for high and low authoritarians necessitates further consideration.

It is possible, of course, that the speculations concerning differences between authoritarians and equalitarians in rigidity of belief systems and intolerance for those who disagree may be incorrect. Another possibility is that such reactions are elicited only in connection with topics that are relevant to authoritarian ideology. That is, dissimilarity of the beliefs of others may be overly threatening to those high in authoritarianism only in areas involving antidemocratic beliefs and correlates of antidemocratic beliefs. If this proposition be true, two hypotheses follow. First, the seven attitudes utilized in the present study should be uncorrelated with the F Scale. For the 160 subjects, correlations were computed between their scores on the F Scale and their scores on each of the six-point attitude items; the seven coefficients range from $-.15$ to $.11$ (significance at the $.05$ level requires a coefficient of $.16$). Second, a replication of the present design, in which each of the seven attitudes were related to authoritarianism, should yield the originally hypothesized results. Should the latter results be obtained, theories of the rigidity and intolerance of authoritarians will need to be modified in the direction of greater specificity.

E. SUMMARY

It has been found consistently that attraction toward a stranger varies directly with the proportion of similar attitudes to dissimilar attitudes held by that individual. On the basis of several characteristics that form part of the authoritarian syndrome, it was hypothesized that as the proportion of dissimilar attitudes held by the stranger increases, high authoritarians respond more negatively than low authoritarians. On the basis of scores on the California F Scale, a total of 160 subjects were selected as high and low extremes in authoritarianism. They were asked to make several judgments, including attraction ratings, about a stranger on the basis of the latter's responses to a seven-item attitude scale. The scales, in fact, were spurious ones constructed by the experimenter. Each subject was in one of eight conditions of similarity-dissimilarity ranging from a stranger similar on all seven topics to a stranger dissimilar on all seven topics. It was found that attrac-

tion varies as a function of similarity-dissimilarity. However, neither the authoritarianism variable nor the hypothesized interaction between authoritarianism and similarity-dissimilarity was found to have a significant effect on attraction ratings. The possibility was suggested that authoritarianism would influence attraction in such a situation if the topics on the attitude scale were more directly relevant to authoritarian beliefs.

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TASK PERFORMANCE AND GROUP STRUCTURE AS A FUNCTION OF PERSONALITY AND FEEDBACK*¹

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A. INTRODUCTION

Within the theoretical framework supplied by Harvey, Hunt, and Schroder (3), this study considers the interactive effects of personality and personality-relevant feedback upon the structure and the problem-solving effectiveness of small groups. Although individual behavior and group processes have been studied separately in most studies, more information can be obtained from examining the structures of personality and of groups as they are interrelated and as they influence the work output of the group.

1. *Group Structure and Personality*

One example of an earlier attempt to relate personality factors to group structure is that by Cleveland and Fisher (1), who view personality through the concept of body image: i.e., the perception that one has of his body as being either distinctly bounded or only vaguely defined. Persons with a sharp body image were compared with those with vague images. Clearly bounded subjects establish a democratic, free, open, and spontaneous atmosphere; consistently demonstrate equal and shared participation; engage in kidding and joking; and produce integrated stories. Vaguely bounded subjects are described as obedient pupils in a strict and formally structured classroom; talk is limited and serious; and the stories consist of a series of discrete episodes offered by separate individuals. In addition, clearly bounded subjects emphasize consideration and respect for the individual and recognition of feelings; while vaguely bounded subjects emphasize the structuring of hierarchical relationships and rules for conduct. Thus, personality is relevant to group behavior and is related to particular group processes.

Haythorn, Couch, Haefner, Langham, and Carter (4) observed the emergent social climate of groups composed of either authoritarian or equalitarian

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personalities. Compared with authoritarian groups, equalitarian groups show greater effective intelligence and leadership behavior; and tend to be more sensitive to others, to show greater goal striving, and to be more supportive and warm. Leaders in equalitarian groups are judged less autocratic, more sensitive, and more submissive in their attitude toward other group members. Apparently, equalitarian groups create democratic climates; and authoritarian groups create autocratic climates.

2. Feedback and Personality

One of the few studies to investigate the interactive effects of feedback and personality on group problem solving was conducted by French (2), who demonstrated that feedback relevant to the personality improves performance more than irrelevant feedback. Achievement-oriented persons perform best with task feedback, while affiliation-oriented persons perform best with feeling feedback. Groups homogeneously composed of achievement-oriented persons listen carefully to task feedback, but are uninterested or even impatient with feeling feedback. Further, achievement groups seem eager to work, time themselves, and argue violently; while affiliation groups seem quieter, less intense about the task, and interested in being friendly with group members and the experimenter.

3. Conceptual-Systems Theory

The present study is designed within the conceptual-systems theory developed by Harvey, Hunt, and Schroder (3). This theory refers to an individual or to a group as a system with certain structural properties. These systems interpret events in particular ways, thus mediating between incoming stimuli and responses. What mediates between input and output is the concept, a program or schema for handling the data that the environment provides. Conceptual organization, developed through differentiation and integration, varies from concreteness to abstractness among individuals.

Concrete conceptual functioning is associated with dichotomous, stereotyped categorical thinking, adherence to rules and authority, and a need for consistency and structure. Abstract-oriented individuals have a greater capacity than others to conceptualize the world in alternative ways and to differentiate and integrate in complex ways, all of which permits flexibility and creativity.

Four points on the concrete-abstract dimension are selected as nodal centers of particular personality orientations. These points are labeled systems.

For this study, System I and System III were selected to represent concrete and abstract personality patterns.

A person disposed to System I is analogous to the authoritarian or bureaucratic personality. The cognitive structure is concrete, undifferentiated, rigid. The demands of rules and authority are paramount. The individual may generate many concepts, but these concepts are discrete and unintegrated. He views other people as fitting into fixed roles and he orders his world by delineating structure.

A person disposed to System III is characterized by sensitivity to social relationships and attempts to keep open the interaction between self and others. He has available more alternative ways of conceptualizing his world and is able to appreciate the standards and intentions of others in relation to himself. He is aware of the effects of his own behavior on others and he can understand the behavior of others within the framework of their standards and needs.

4. *Conceptual Systems and Group Behavior*

Schroder and Harvey (6) specify group structure as the result of interaction between the properties of the personality system of the members and the properties of the group situation. Personality and group are assumed to be isomorphic; that is, when individuals disposed toward the same system interact, they generate a group structure similar in properties to the personality structure.

A group of persons all members of which are oriented to System I is expected to develop hierarchical organization, a rigid and circumscribed set of norms, fixity of roles, emphasis on clearly defined procedures, a businesslike, and a task-oriented approach. A group of persons all members of which are oriented to System III is expected to develop a democratic group structure characterized by socially accommodating interaction demonstrating mutuality and openness, ability to change and shift roles and procedures, and equality of participation.

Tuckman (8) found that the abstractness and the democratic nature of group structure were a function of the abstractness of the individual members. Thus, concrete-oriented teams adopt structures that minimize diversity and produce autocratic leadership. Abstract-oriented teams adopt more abstract organization, allow more diversity, seek more information, play a more active game, and produce democratic leadership.

Lawrence, as reported by Tuckman (8), worked with an environment of a modified war game impinging on teams varying in cognitive complexity.

He found that abstract-oriented teams avail themselves of information more than concrete-oriented teams; that is, they store and integrate information to use in future decision making, while the decisions of concrete-oriented teams do not reflect the information that is received. Further, in more complex teams, sensitivity to the environment and differentiation-integration of information are relatively greater.

Researchers in our area of concern have not always coordinated the interplay of personality, feedback, group structure, and problem-solving effectiveness; nor have they conceptualized them within a theory. The present study attempts to design the variables and to state the hypotheses on the basis of conceptual-systems theory. Also, whenever group structure has been included, its components have not always been made explicit; and the responses of the group have been viewed independently rather than as indices of an encompassing group structure. The present study attempts to specify the meaning of group structure and to perceive group behavior within this dimension.

5. *Problem*

Group structure in this study is the particular pattern or atmosphere that typifies the setting that group members create and under which they work and encompasses the overall, global organizational framework. In a sense, it intervenes between the independent variables and the task responses.

Feedback is defined as a verbal report apprising the group members of the experimenter's evaluation of their work. When feedback consists of information assumed pertinent to and harmonious with the personality, it is labeled of high relevance; and when it is assumed to be of no particular concern for the subjects, it is of low relevance. When feedback meshes compatibly with the personality, behavior should be more effective because the potential for conceptual functioning is optimally realized. When feedback is of little significance for the personality, it fails to facilitate performance; and behavior should not change.

6. *Hypotheses*

1. Groups composed of persons disposed to System III evolve a more democratic group structure than groups composed of persons disposed to System I.
2. Groups experiencing feedback of high relevance perform better than groups experiencing feedback of low relevance.
3. Groups composed of persons disposed to System III perform better than groups composed of persons disposed to System I.

B. METHOD

1. *Subjects and Experimental Design*

Ss were 96 Syracuse University freshmen males, 48 oriented to System I and 48 oriented to System III. These two levels of personality organization and two forms of feedback (task and feeling) were varied concomitantly. On the one hand, some individuals oriented to System I were subjected to task feedback of high relevance; others, to feeling feedback of low relevance. On the other hand, some individuals oriented to System III were subjected to task feedback of low relevance; others, to feeling feedback of high relevance. Eight three-man groups were assigned to each of the four experimental treatments.

2. *Selection of Personality Groups*

Ss were selected on the basis of performance on a sentence-completion test designed for research with conceptual-systems theory. The test consists of 10 stems each of which *S* completed in 90 seconds. Completions are scored on three dimensions (7). The concrete-abstract manual uses a five-point scale to assess level of abstractness and yields a mean abstract score for each *S*. The System II and the System III manuals measure disposition to these two systems and also yield mean scores for each *S*.

Development of the test and of the manuals has been based on research with males attending high school and college. Schroder and Streufert (7) report that on all three manuals the intercorrelations between scores of three raters range from .70 to .98, indicating that the manuals can be used reliably by different raters. Scoring was done by four graduate students. After one judge had identified Ss disposed to Systems I and III, his opinions were checked by another judge. Any Ss on whom the judges disagreed were eliminated. With this procedure, 150 System I and 106 System III Ss were identified from the total of 1,031 freshmen. This was the pool from which the 96 experimental Ss were obtained.

3. *Task and Materials*

The task was a group version of the Goldstein-Scheerer Object-Sorting Test developed especially for this investigation. Some of the objects were a red rubber ball; two gold, plastic swizzle sticks; pliers; a block of wood with a nail in it; and two cubes of sugar.

In each treatment group, the goal of the Ss was to classify the objects into groupings according to some conceptual principle. This particular task was chosen because it was assumed that performance is facilitated by ability

to conceptualize abstractly and because it is a test designed to elicit abstract potential.

Each *S* could see the 10 objects, which were in a box before him; but he could not see those of the other two members. Paper and a single pencil were on the table, and nearby was a tape recorder with the microphone suspended above the *Ss*. Within view of the *Ss* was a Kodak timer.

4. Procedure

The three *Ss* were seated at a table facing each other, while *E* sat apart from them. Instructions emphasized the importance of three *Ss* working together as a group. They were told to devise ways of conceptualizing the objects in order to form meaningful groups, to obtain as many groups as possible and to make each group as large as possible with the best possible concept. *Ss* were told to submit an answer sheet after 30 minutes, to list the objects in each group and to give the reason for putting the objects together. Finally, they were advised that *E* would furnish them information on how they were doing in the experiment.

Five minutes after the start of the session, *E* introduced feedback. Asking *Ss* to pause in their work, so that *E* could tell them how they were doing, *E* gave either task or feeling feedback. Task feedback was:

First of all, I'd like to say that you're being very efficient in the way you're handling the problem; in fact, your efficiency on the job is one of your strongest points. And you're doing a good job of following the instructions which I gave you for the experiment very carefully; you stuck to the rules and remembered the correct way to do this. You've been persistent, all three of you, and you haven't let different points of view distract you. Another thing is, you got a method for the problem and showed a lot of determination in following it through. The three of you have also shown an ability to organize your work, again really efficiently. Finally, I think you as a group have managed to concentrate on the task rather than wondering about the motives of the other people.

Feeling feedback was:

First of all, I'd like to say that you're being very considerate of the feelings of the others as you've been talking about the problem; in fact, this tendency of yours to note how others feel about things is one of your strongest points. And you're doing a good job of trying to understand the viewpoints of the others; you've gone out of your way to understand the rest of the group. You made it easy for the others to participate and express their ideas. You were very definitely interested in the personalities of the others; right away you got into very good relationships with them. Another thing is, the three of you have shown that

you can treat each member as an individual, taking into account the kind of person he is. Finally, I think you as a group have shown concern for the intentions and thoughts of the others.

After completing the 30-minute period on the problem, each *S* completed a questionnaire on which he gave his interpretation of and reaction to the feedback, thus providing an independent means of evaluating success of feedback induction.

5. *Problem-Solving Effectiveness*

Problem-solving effectiveness was represented by three scores: number of sorts, adequacy of sorts, and popularity. The number of sorts consisted of the number remaining after eliminating unacceptable responses.

Adequacy of sorts was evaluated by a judge who assigned a rating from one to five to each group, considering degree of abstractness, inclusion of all objects appropriate to the concept, and clarity of the label. Interrater reliability was .79 for all 32 groups.

Popularity was determined by counting the total number of times a label was used in the experiment and calculating the mean score for each group. The higher the score, the more the group used popular, common concepts.

Use of these scores as the major test of the hypotheses was based on the assumption that they captured the important characteristics of problem-solving effectiveness. In addition, they seemed similar to measures that frequently have been used in earlier studies. Three scores, considered secondary tests of problem-solving effectiveness were also calculated: mean number of objects per sort, number of objects in the largest sort, and per cent of acceptable sorts.

Intercorrelations for the three major scores are significant, supporting their use as a reflection of the single dimension of problem-solving effectiveness. Popularity is inversely correlated with adequacy ($r = -.39$) and with number of sorts ($r = -.39$), while number of sorts and adequacy are positively related ($r = .49$).

6. *Democratic Group Structure*

From the tapes of experimental sessions, analysis of the group structure was made by a rater using a manual of 26 items. Democratic group structure was based on three scores: total democratic structure, flexibility, and openness.

Total democratic structure was defined as a pattern of relationships characterized by an interdependent orientation and was based on the sum of scores for six components. The range of scores was from 63 to 111, and

interrater reliability is .92. Flexibility was defined as a lack of concern for structure, a tendency not to depend on an explicit and careful organization, freedom from stress on rules and instructions and delineation of procedure. This measure was based on six items in the manual. The range of scores was from 12 to 30, and interrater reliability is .81. Openness was defined as free, creative, and flexible interaction and a democratic pattern of information exchange and decision making; and was based on 14 items in the manual. The range of scores was from 24 to 59, and interrater reliability is .93.

Four other components contributed to the rating of total democratic structure: initial democratic structure, democracy of overall structure, equality of participation, and democratic leadership. Total democratic structure correlates .38 with flexibility and .92 with openness, and flexibility correlates .12 with openness.

C. RESULTS

1. *Success of Feedback Induction*

Induction success was evaluated by the responses to two items in the post-experimental questionnaire, answered on a seven-point scale: "Considering the work report, how much information do you think it gave you about how well you were taking account of the feelings of the others in the group?" and "How much information did it give you on how efficient you were in your work?"

According to Table 1, while task-feedback Ss felt that they received more information on the task than did feeling-feedback Ss ($F = 16.29$, significant beyond the .01 level), they did not feel that they received significantly more

TABLE 1
MEAN RATINGS OF FEEDBACK INFORMATION AS RELATED TO FEEDBACK CONDITION

Type of feedback	Rating of feedback information		<i>t</i>
	Task-type information	Feeling-type information	
Task	5.63	5.29	1.18
Feeling	3.89	5.71	4.89*

* Significant beyond the .005 level.

task information than feeling information. While feeling-feedback Ss felt that they received more feeling information than task information, they did not feel that they received more feeling information than did task-feedback Ss ($F = 1.34$). The conclusion, therefore, is that the types of feedback were not clearly distinguished and, in general, the manipulation was unsuccessful.

On a theoretical basis, it was assumed that feedback of high relevance would be more pleasing to Ss than feedback of low relevance, so that feeling feedback would be congruent to System III Ss, and task feedback would be congruent to System I Ss. This assumption was tested by another questionnaire item: "How would you describe your own feelings about what the experimenter said?" Ss indicated their reactions on a scale ranging from one (not pleased) to seven (very pleased). No difference between the system groups in rating of the two forms of feedback was observed, so that the assumption of differential relevance is not supported.

2. *Personality and Group Structure (Hypothesis 1)*

It was predicted that the groups formed by abstract-oriented Ss (System III) would be more democratic, less concerned with structure, and more open than would the groups formed by concrete-oriented Ss (System I). This prediction is not supported. See Table 2.

TABLE 2
MEAN GROUP STRUCTURE SCORES BY PERSONALITY GROUP

Group structure	System I	System III	F
Total democratic structure	87.44	84.44	.46
Flexibility	20.75	19.60	.33
Openness	43.88	44.19	.01

3. *Feedback and Problem-Solving Effectiveness (Hypothesis 2)*

Although questionnaire results raised doubt about the assumption of feedback relevance, the hypothesized facilitating effect of high relevant feedback, nevertheless, was tested. While, in the feedback conditions, the task scores vary in the hypothesized direction (and do so, even within each system), none of the differences is significant, and the hypothesis is not supported (Table 3).

TABLE 3
MEAN PROBLEM-SOLVING EFFECTIVENESS SCORES BY FEEDBACK RELEVANCE OF GROUP

Sorts	System I Relevance		System II Relevance		Both systems Relevance		F
	High	Low	High	Low	High	Low	
Number	13.75	11.75	14.00	11.88	13.88	11.82	1.06
Adequacy	2.75	2.50	3.25	2.63	3.00	2.56	1.22
Popularity	15.73	15.56	15.70	14.24	15.72	14.90	.22

4. *Personality and Problem-Solving Effectiveness (Hypothesis 3)*

Results for testing the hypothesized superiority in problem-solving effectiveness for System III groups are presented in Table 4. None of the differences is significant, so that the hypothesis is not supported. For all three task variables, however, the differences are in the expected direction.

TABLE 4
MEAN PROBLEM-SOLVING EFFECTIVENESS SCORES BY PERSONALITY GROUP

Sorts	System I	System III	F
Number	12.75	12.94	.01
Adequacy	2.63	2.94	.62
Popularity	15.65	14.97	.15

5. *Group Structure and Problem-Solving Effectiveness*

In general, indices of democratic structure are directly associated with problem-solving effectiveness (Table 5). Total democratic structure is

TABLE 5
RELATION BETWEEN GROUP STRUCTURE AND PROBLEM-SOLVING EFFECTIVENESS SCORES

Sorts	Total democratic structure	Flexibility	Openness
Number	.34	-.17	.40*
Adequacy	.41*	.31	.46**
Popularity	-.34	-.09	-.38*

* Significant beyond the .05 level.

** Significant beyond the .01 level.

significantly correlated with adequacy and tends to be correlated both with number of sorts and with popularity. Openness is significantly correlated with all three task variables. Flexibility is not related to number of sorts and popularity, but tends to be related to adequacy.

6. *Effect of Intelligence*

College Entrance Examination Board scores were available for almost all Ss; so the possible effect of intelligence was analyzed by computing a mean score for each three-man group. While the conditions differ significantly at the .05 level ($F = 3.35$), intelligence is not correlated with problem-solving effectiveness or with group structure.

D. DISCUSSION

Manipulation of the feedback variable was unsuccessful. Ss who received task feedback judged that they had received about as much information on feelings as on the task. Students in general are accustomed to behavior evaluations that focus on efficiency and achievement; seldom are they told that they are taking into account the feelings of others and being responsive to the personalities of other people. It is probable, therefore, that, on the basis of strong prior experience, they assume that any work report will concern the task. Ss are not sensitive to the possibility that they may receive some other kind of feedback. In this experiment, Ss who received task feedback probably did not discriminate between the two kinds of feedback; rather, they may have generalized that if they were such efficient workers, they must also be relating well to the other group members.

Ss who received feeling feedback, however, believed that they received little information on the task. In Table 1, the score of such Ss stands out as the single variant score. The finding that Ss with task feedback interpreted it as giving as much feeling information as task information suggests that feeling-feedback Ss were not impressed by the feeling content relative to task content. It seems to be that feeling feedback startled Ss into an awareness that they were not being told anything about their efficiency. Lack of customary feedback seems to have been significant for Ss, rather than the experience of unusual feedback. Thus, although feeling feedback was in fact positive, it seems that Ss perceived it as negative and actually experienced an absence of task feedback.

In addition to failing to interpret the feedback as intended, Ss did not react to it as expected. Feedback of high relevance did not seem more pleasing than feedback of low relevance. This finding casts doubt not on the experimental manipulation, but on the theoretical model. The principal concern, however, is that feedback was not in the first place interpreted as *E* intended. This finding restricts conclusions regarding the hypothesized compatibility of feedback and personality.

Relevance of feedback was not related to problem-solving effectiveness. For almost each task variable, however, the more effective performance tended to be associated with high relevant feedback. When the data are viewed according to system, the same trends occur for feedback relevance—with the scores of problem-solving effectiveness in general being higher for System III groups than for System I groups. Since induction success, however,

was preliminary to studying the relationship of feedback to problem-solving effectiveness, it was not especially meaningful to pursue this analysis.

The fact that the data fail to support the theoretical prediction indicates that personality (as measured in this study) is not related to problem-solving effectiveness, although System III groups tended to be more effective than System I groups. The value of the particular scores that were used seems substantial, in view of their intercorrelations. The intercorrelations support the procedure of using the scores as a summary representation of problem-solving effectiveness. An important consideration is the nature of the task itself. Object sorting is a problem unique to this kind of study and, as with any new procedure, its usefulness may not be completely understood. As an instrument, it may not be sufficiently sensitive to differentiate concrete and abstract functioning and to elicit abstract behavior.

The importance of the particular task studied has been cited in previous research. Hoffman and Smith (5), for example, note that the problem selected partly determines behavior, each problem eliciting certain types of reactions and imposing different requirements on groups. With one problem, Hoffman and Smith evoked task-directed behavior; with another, social-emotional behavior concerned with personal relationships.

Personality was not found to be related to group structure. The prediction that System III groups evolve a more democratic structure than System I groups was not confirmed. This result is especially puzzling because previous research within the present framework has established this relationship rather strongly.

Following conceptual-systems theory, fairly clear-cut results, for example, have emerged from several investigations at the Princeton laboratory. One possible source of explanation for the present results is suggested by an effect noted by Tuckman (8) in his study. He concluded that time was required for the structural properties of the groups he studied to emerge and be detected. It was not until the beginning of the third hour of interaction that Tuckman recognized the emergence of the more complex properties of teams composed of the more abstract-oriented participants.

Unlike Tuckman's studies, the present experiment assembled three strangers who interacted for only 30 minutes. Possibly this time was not sufficient to permit the emergence of expected group structure. The only data available to check this possibility were the ratings of initial group structure for which the judge considered only the first five minutes of the session. Most of the author's ratings of group structure are positively intercorrelated, and all the components are positively correlated with total democratic structure (except for initial

structure). This score is negatively, though nonsignificantly, correlated with the total rating and with all the other ratings of group structure. This finding suggests that the first five minutes (one-sixth of the total experimental time) may not be a representative sampling of the group processes, and that the groups appear to behave differently when viewed in the beginning and from an overall perspective. Possibly even after one half hour, the groups were not sufficiently stabilized to manifest their characteristic structural organization.

The way in which a group organizes itself seems to have a direct influence on its task output and its effectiveness in dealing with the problem (Table 5). The more democratic the group structure, the more effective the performance. Secondary analysis provides the further information that democratic structure and openness are significantly negatively correlated with percentage of acceptable sorts. This fact suggests that a democratic structure fosters an outpouring of all possible responses regardless of adequacy, so that (while such groups may have more offerings than autocratically structured groups) a relatively small proportion of the responses is acceptable. This result seems consistent with that for "brainstorming" research.

In contrast to autocracy, it appears that democracy is associated with greater productivity (but that more of the output is inadequate) and with a higher quality and originality of responses; but that it is not necessarily conducive to increasing the size or range of the sorts.

E. SUMMARY

Within Harvey, Hunt, and Schroder's conceptual-systems theory (3), this study investigated the interaction of personality and personality-relevant feedback in relation to the structure and the problem-solving effectiveness of small groups.

Two systems (System I and System III) were selected as illustrating concrete and abstract orientations respectively. Groups of persons disposed to System III were hypothesized to evolve a more democratic group structure and to perform better than groups of persons disposed to System I. Further, groups experiencing feedback of high relevance were hypothesized to perform better than groups experiencing feedback of low relevance.

Ss were 96 Syracuse University freshman males, 48 oriented to System I and 48 oriented to System III. They worked in 32 three-man groups that varied in personality (System I or III) and feedback (high or low relevance). Ss were instructed to work collectively on an object-sorting test for 30 minutes, discussing ways of putting together objects that belonged together.

Their goals were a large number of sorts, many objects per sort, and adequate sorts.

After five minutes, *E* delivered either task or feeling feedback. Problem-solving effectiveness was measured by number of sorts, adequacy of sorts, and their popularity. Group structure included total democratic structure, flexibility, and openness of relationships.

According to a postexperimental questionnaire, feedback induction was unsuccessful, and the assumption of compatibility between feeling feedback and System III and between task feedback and System I was not supported. This finding may account in part for the failure to find the expected relation between relevant feedback and problem-solving effectiveness. Failure of induction was, perhaps, due partly to the *Ss'* interpretation of feeling feedback.

Personality was not found to be related to democratic structure or to problem-solving effectiveness. Democratic structure was found to be positively correlated with quantity of output and with its adequacy and originality. The task studied may not be sensitive to system-specific skills. Further, 30 minutes may have been insufficient to permit system-specific group functioning and the emergence of structural group properties.

Success was achieved, however, in scoring group behavior reliably and in determining scores both of group structure and of problem-solving effectiveness, which variables were found to be highly intercorrelated.

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VALUE PREFERENCES AND INTERPERSONAL BEHAVIOR*

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A. INTRODUCTION

To study values and their relationships to social-psychological dimensions and behavior, it is necessary to measure individual differences in values in a way that is plausible and statistically compelling. The study to be reported, as its point of departure, utilized the descriptions of world views developed by Morris (3) in his effort to define both intracultural and intercultural differences in values. Morris' descriptions of 13 orientations toward experience were used as a source of value statements, and an effort was directed toward observing whether or not individuals sorting the value statements order themselves into meaningful clusters representing various hypothetical persons.

Allport, in his recent revision (1) of his volume on personality, writes that to the study of values there are two approaches worthy of note. These approaches are his own and that of Morris. Indeed, many researchers have utilized the Allport and Vernon Study of Values which, since its construction, has exerted a strong influence on research. The review literature (2) testifies to the rich preoccupation with the Study of Values and the many efforts to relate its scores to a wide range of social and psychological variables. In contrast, the instrument developed by Morris has occasioned little published research, although it appears to be a fruitful way of measuring values [see Osgood *et al.* (4)].

The Morris instrument, entitled *WAYS TO LIVE*, contains 13 paragraphs, each of which describes a particular value orientation toward the world. A respondent considers each paragraph in a predetermined order and rates himself on a scale of one ("I dislike it very much") to seven ("I like it very much"). This method has been successful in defining differences between cultures and, within American culture, self-ratings on the *WAYS* have been related to social and personal factors (3).

The descriptive paragraphs, however, are exceedingly complex. WAY 1, for example, requires an overall self-judgment of commitment to an orientation of "preserving the best." An individual is confronted with sentences such as "One wants the good things in life but in an orderly way"; "Friend-

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ship is to be esteemed but not easy intimacy with many people"; and "Restraint and intelligence should give order to an active life" (3, p. 15), etc.

In the present research, the analysis was directed toward the *larger* number of propositions that are contained in the 13 paragraphs. In lieu of accepting *the paragraph* as the unit of study, the research directed its attention to 63 *propositions* that could be extracted more or less whole from the paragraphs. Further, inasmuch as Morris discovered that individuals in American culture tend to rate WAY 7 as most desirable and, inasmuch as WAY 7 reflects a "flexible" orientation indicating preference for accepting "... something from all other paths of life. . . . At one moment one of them is the more appropriate; at another moment another is the most appropriate" (3, p. 17), propositions from WAY 7 were not included in the derived set of 63 propositions. Should there be a flexible world view, it would emerge in the analysis of the propositions from the other 12 orientations because WAY 7 orchestrates them into a flexible view.

Basically, therefore, the present research is directed toward the discovery of clusters of individuals who subscribe to certain propositions regarding the kind of life they would like to lead. It was anticipated that meaningful clusters would emerge and that separate clusters reflecting differing world views would be susceptible of interpretation by an inspection of the propositions in question. It was also anticipated that the extent of commitment to an hypothetical factor (person) would be related to interpersonal behavior. Because the propositions that inhere in WAYS reflect toward the world value orientations that are affectional or power-oriented or "inclusional," correlations were sought between commitments to world views and paper-and-pencil measures of interpersonal behavior that are significantly related to affection, control, and inclusion behavior (5). Significant correlations would argue for the value of describing individual differences in world view by the method of this study and would lend support to the notion that values and behavior are related.

B. METHOD

1. Subjects

Fifty undergraduate students enrolled in lower-level psychology courses at The Pennsylvania State University were utilized as subjects. All were in the age range 18 to 24, with a mean of about 20. Subjects were equally divided as to sex. The procedure was carried out with small groups of about six to eight subjects during the early evening hours. A session lasted approximately

one and one-half hours. It was made obvious to the subjects that anonymity was assured. They were informed that the study was concerned with values and were given some information on possible relationships between values and other variables. Subjects were generally at ease throughout the session and found the task interesting—i.e., upon completing their work, they sought opportunities to discuss what they had done.

2. Procedure

Prior to assembling subjects, *E* had recast 12 of the 13 WAYS TO LIVE in the form of 63 separate propositions most of which were taken whole from the original text of Morris' paragraphs. The 63 propositions were reproduced on 3" × 5" cards and subjects were required to Q sort the cards into a nine-step normal distribution along the dimension "The kind of life you would LEAST like to live" to "The kind of life you would MOST like to live." It is worth noting that each subject was required to judge the kind of life he *personally would want to live*. This is similar to Morris' original instructions. A subject was *not* asked to indicate the kind of life he leads or thinks it prudent for himself or others to live in our society. As a matter of fact, these latter sets were specifically excluded in the Q-sort instructions.

Immediately following the Q sort, subjects were given three scales of the FIRO-B (5) which, by way of Guttman scales, provide measurements on the dimensions of affection, control, and inclusion. While FIRO-B contains six scales measuring both the expression of and the desire for affection, control, and inclusion, only the scales reflecting expression were utilized. Schutz' volume provides convincing data on the validity of the scales for measuring these three dimensions and the intercorrelations among the scales are low.

3. Method of Analysis

The matrix generated by intercorrelating the Q sorts of the 50 persons was subjected (on an IBM 650 computer) to an inverse factor analysis utilizing a Varimax solution for principal components. Definitions of the factors that were extracted were attained by an examination of the separate propositions that were related significantly to each factor that emerged. This was accomplished by correlating each individual's factor loading for each factor with his placements of the 63 propositions. Computation of Pearson product-moment correlations between factor loadings on each factor and the personality variables of the FIRO-B completed the present work.

C. RESULTS AND DISCUSSION

Seven factors were extracted from the matrix of intercorrelations.¹ The rotated factor loadings are given in Table 1. On Factor I, 14 persons had loadings above .40; on Factor II, 13 persons had such loadings; on Factors III through VII, 14, nine, six, eight, and three persons had such loadings respectively. Because only three persons had loadings on Factor VII and because no item-factor correlation was above .40, Factor VII proved not susceptible to interpretation.

As indicated earlier, definition of factors was sought by examining the content of those items that were related to each factor. This examination involved only those items that correlated $\pm .40$ with each factor (an r of .37 is required for significance at the .01 level).

1. *Factor I*

Eight items correlated above .40 with Factor I. They are reported in Table 2. On Factor I, individuals commit themselves to the view that personally they would like to live a life consisting of sympathetic concern for other people, together with a rejection of the notion of isolation from others. They express the view that affectional involvement is desirable. In addition, there is concern with ultimate ideals and more ultimate purposes and a rejection of unqualified spontaneity and action. In other words, individuals high on Factor I are saying that affectional involvement in the context of more ultimate ideals and purposes is desirable.

It is worth noting that scores (loadings) on Factor I are related significantly both to the inclusion and the affection scales of the FIRO-B; that is, there is a relationship between valuing affectional involvement and the expression of affection and inclusion behavior. Table 3 reports the correlations between the FIRO-B scales and the factors yielded by the analysis. Note that the factor is *not* related to the control dimension of the FIRO-B.

2. *Factor II*

Nine items correlated above .40 with Factor II. They are given in Table 4. Three notions about a desirable life emerge from examining the propositions. There is the view that permitting oneself to be used by others in their

¹ Three tables, A, B, and C, including the 63 propositions, the zero-order intercorrelation matrix, and the unrotated factor loadings have been deposited with the American Documentation Institute. Order Document No. 8484, remitting \$1.25 for 35 mm. microfilm or \$1.25 for photocopies from Chief, ADI Photoduplication Service, Library of Congress, Washington 25, D. C.

TABLE 1
THE ROTATED FACTOR MATRIX

Subject	I	II	III	Factors IV	V	VI	VII
1	425	-608	-200	124	-019	-038	-147
2	118	-037	-151	137	-726	037	037
3	201	-153	-690	417	297	000	-042
4	-000	084	-714	406	204	347	033
5	059	-128	-619	-041	-116	-104	-078
6	-210	-361	-641	-052	-005	414	-104
7	212	-300	-079	-336	-677	029	-056
8	410	-130	019	050	-269	338	-469
9	305	-440	-407	-105	-149	430	171
10	027	-355	-509	075	-374	235	036
11	424	-489	182	210	-389	-038	266
12	515	-307	-241	282	-138	197	019
13	-039	-686	-292	-352	-160	154	-048
14	047	-307	-278	297	-030	588	007
15	081	-022	-587	-019	-320	277	347
16	126	-770	-051	-004	-146	266	-082
17	110	-383	-314	506	-093	297	100
18	172	-421	-139	315	-150	259	-541
19	-134	253	024	-679	127	-242	-047
20	800	-176	033	156	-089	066	097
21	778	046	-061	-272	127	105	055
22	242	-167	003	117	-111	484	-233
23	008	-172	101	304	-052	107	628
24	371	-207	-196	302	-344	295	-024
25	595	066	-210	176	-202	335	-298
26	074	-088	-024	790	103	-040	-005
27	077	-503	-288	148	-304	137	-051
28	155	-441	-518	263	-035	-116	-041
29	-012	135	-085	552	-374	063	-085
30	506	-509	-020	192	-260	227	056
31	068	-151	-089	072	-023	676	095
32	173	043	-359	461	-065	407	144
33	105	-252	-473	088	-274	294	-275
34	320	-104	-231	217	-222	700	-047
35	028	026	-547	122	-566	175	-047
36	477	-130	-361	137	-325	252	-198
37	385	-288	-057	182	-555	348	-160
38	159	-443	-295	534	-257	004	-204
39	446	067	-062	337	-455	165	-120
40	-276	-521	-117	108	152	283	149
41	555	-516	-119	035	-154	119	156
42	135	-089	-420	191	-401	384	-022
43	697	018	-169	263	-194	106	-157
44	270	-102	-548	192	-327	314	-161
45	177	-264	-639	-002	-223	287	-039
46	126	133	009	633	-088	394	185
47	263	171	-310	138	-224	630	-170
48	435	091	-401	084	-383	312	010
49	-232	-663	055	153	086	-390	021
50	472	260	-391	-145	-096	356	-048

TABLE 2
ITEMS INCLUDED IN INTERPRETATION OF FACTOR I

Item No.	r	Item
14	.43	One's life should portray as its core a sympathetic concern for other people.
15	-.51	We should not follow the past and dream of the future. We should act.
26	-.43	One's direction of interest should be away from intimate association with social groups.
34	-.42	Man's future depends on what he does, not what he feels or speculates about.
35	-.62	One should be receptive to some cosmic purpose.
50	.48	A person should in the main let himself be used by the great purposes in the universe.
62	-.43	A person should withdraw from people, keep aloof and self-centered.
65	-.51	Spontaneity is more important than doing good. The good follows from spontaneity.

TABLE 3
SUMMARY OF CORRELATIONS BETWEEN FACTORS AND FIRO-B VARIABLES

Factors	Inclusion	Affection	Control
I	.46*	.37*	-.21
II	.48*	.39*	-.03
III	-.05	.04	-.13
IV	.04	.12	.08
V	.08	-.13	.38*
VI	.28	.38*	.13

* An r of .37 is required for significance at the .01 level.

growth (serving others) is desirable. This view is coupled with a rejection of the cultivation of the inner self, of isolation, and of restraint. While Factor I appears to denote *affectional* involvement, Factor II indicates involvement with others when the central concern is *service* rather than *affection*. Table 3 reports significant correlations between Factor II and inclusion and affection. That is, the extent of commitment to involvement with others for helping them covaries with the expression of affection and inclusion behavior. Again note that the factor is not related to the control dimension of the FIRO-B.

3. Factor III

Eleven items, given in Table 5, are involved. Those characteristics that distinguish individuals on this factor are mainly the following: a sympathetic concern for other people, together with a contemplative rather than an active life. The reader will recall that Factor I indicated affectional involvement with concern for ultimate purpose. On Factor III, individuals opt for affectional involvement, with acceptance of inner cultivation, contemplation. Rejected is the active, energetic life, a life that manipulates experiences, etc.

TABLE 4
ITEMS INCLUDED IN INTERPRETATION OF FACTOR II

Item No.	<i>r</i>	Item
9	— .58	The rich internal life of ideals, of sensitive feelings, of reverie, of self-knowledge should be man's true home.
30	— .59	Man should in the main cultivate the inner self.
31	— .61	One should in the main turn inward, for it is only this that is finally rewarding.
49	— .41	Friendship is to be esteemed but not easy intimacy with many people.
51	— .43	One should in the main hold firm the reins to the self and control unruly impulses.
58	— .40	One should for the most part "go it alone," assuring oneself of privacy in living.
59	— .62	One should primarily stress self-sufficiency, reflection, meditation, knowledge of self.
64	— .65	The center of life should be found within oneself.
67	.49	A person should let himself be used by others in their growth.

TABLE 5
ITEMS INCLUDED IN INTERPRETATION OF FACTOR III

Item No.	<i>r</i>	Item
14	.42	One's life should portray as its core a sympathetic concern for other people.
15	— .48	We should not follow the past and dream of the future. We should act.
24	— .47	It is the active deed which is most satisfying—the doing, the adventuresome.
29	.45	One should give up the external world and find the larger and finer sea of the inner self.
30	.50	Man should in the main cultivate the inner self.
34	— .46	Man's future depends on what he does, not what he feels or speculates about.
40	.50	One should acknowledge the futility of aggressive action and attain to joy in contemplation.
43	— .41	Since life tends to stagnate, it is desirable to stress the need for constant activity—physical action in the realistic resolution of special problems.
44	— .44	Muscles are alive to joy only in action—climbing, running, exercising. That's the way to live.
60	— .42	One's life should contain as its core overcoming, dominating, conquering obstacles.
66	— .49	Outward energetic action. The excitement of power in the tangible present. That's the way to live.

None of the correlations between Factor III and the FIRO-B dimensions reaches significance.

4. Factor IV

Factor IV may be described by the 13 items that are reported in Table 6. This factor comes closest to implying, as does WAY 7 in Morris' original

TABLE 6
ITEMS INCLUDED IN INTERPRETATION OF FACTOR IV

Item No.	<i>r</i>	Item
13	.41	Life should merge energetic group activity and cooperative group enjoyment.
18	.47	Life's main aim is not to control the course of the world or society but to be open to its delights.
19	— .47	One should avoid personal entanglements.
20	.52	When one sits under the trees and sky, open to nature's voices, then will wisdom come from without to within.
23	— .58	One should not be seduced by comfort and desire. One should hold fast to the rational life.
32	— .57	One should avoid vulgarity, great enthusiasm, irrational behavior, impatience, indulgence—and respect discipline, intelligence, good manners.
33	.53	Enjoyment requires self-contentedness which leaves one free to savor experience.
41	— .48	Vigilant, stern, manly self-control should be the keynote of life.
42	.50	Man should acknowledge that the important pleasures consist in just existing, savoring food, having comfortable surroundings, talking with friends, relaxing, etc.
45	— .64	One should be self-sacrificing.
46	.45	Life is primarily something to be enjoyed with relish and abandonment.
51	— .41	One should in the main hold fast the reins to his self and control unruly impulses.
62	— .43	A person should withdraw from people, keep aloof and self-centered.

paragraphs, that a life of variety and flexibility is the one to lead. A life full of zest appears central—one of dionysiac quality. There is acceptance of action, of enjoyment, of variety. One should not avoid personal relationships nor should one be immune from desiring comfort. Variety and flexibility appear to be the keynote. This factor is not related to any of the FIRO-B dimensions.

5. Factor V

Factor V, while defined only by the four items reported in Table 7, is immediately and easily interpretable as the assertion that the life to lead

TABLE 7
ITEMS INCLUDED IN INTERPRETATION OF FACTOR V

Item No.	<i>r</i>	Item
11	— .46	One should lead a life, in the main, of receptivity, appreciation and helpfulness to others.
28	— .47	Receptivity should be the keynote of life.
56	— .69	One should seek the good things in life but in an orderly way—maintaining clarity, balance, refinement, control.
66	.48	Outward energetic action. The excitement of power in the tangible present. That is the way to live.

involves energetic action and the excitement of power. A life of receptivity of service to others, of orderliness, etc. is rejected. Interestingly, commitment to Factor V covaries with the expression of control on the FIRO-B Test. Thus, the first factor that argues for active power as the keynote for life provides the only significant correlation with expression of control in personal behavior.

6. Factor VI

Ten items (see Table 8), define Factor VI. Individuals high on Factor VI opt for life that consists in concern and affection for other people. But,

TABLE 8
ITEMS INCLUDED IN INTERPRETATION OF FACTOR VI

Item No.	r	Item
11	.52	One should lead a life, in the main, of receptivity, appreciation and helpfulness to others.
12	-.40	One should be a serene, confident, quiet vessel and instrument of the great, dependable powers which move to their fulfillment.
13	.45	Life should merge energetic group activity and cooperative group enjoyment.
22	.47	Affection for others should be the main ingredient of life.
24	.43	It is the active deed which is most satisfying—the doing, the adventuresome.
31	-.44	One should in the main turn inward for it is only this that is finally rewarding.
34	.43	Man's future depends on what he does, not what he feels or speculates about.
53	.61	One should primarily live outwardly.
54	.54	One should merge oneself with a social group, enjoy cooperation and companionship, join with others for realization of common good.
63	.52	One should live outwardly with zest, working with others to secure the things which make a pleasant and energetic social life.

in contrast with Factor I, on which Factor affectional involvement is coupled with concern for ultimate values and purposes, affection on Factor VI is coupled with the assertion that the active life is most rewarding. One should live outwardly; one should not be oriented within. It is as if Factor VI argued for *affectional extraversion*, while Factor I argued for *affectional introversion*. There is a significant correlation between commitment to Factor VI and the FIRO-B affection dimension.

Six different kinds of desirable world views have emerged from the statistical analysis. Three of them (I, III, VI) have in common a sympathetic concern for other people; but they are differentiated in that Factor I argues for concern with ultimate purposes and motives, and Factor III and Factor VI indicate a contemplative life and an active, coping life respectively. Factor II implies service to others; Factor V implies power; and Factor IV im-

plies flexibility and variety as defining the life one would like to live. Some of the factors are significantly related to the expressions of control, affection, and inclusion behavior (as measured by the FIRO-B).

For the purposes of comparison, it is worth reporting the result of Morris' factor analysis of ratings of *paragraphs*. For a similar group of young, American college students, Morris' analysis yielded five factors identified as (a) social restraint and self-control, (b) enjoyment and progress in action, (c) withdrawal and self-sufficiency, (d) receptivity and sympathetic concern, and (e) self-indulgence. The reader will note some congruence between Morris' analysis and our own. His first factor has elements of similarity to Factor I of the present study; his third factor is related to our Factor III. On the other hand, it is clear that different results accrue from the analysis of the responses to *propositions* contained in the paragraphs. It is argued here that the paragraphs are indeed complex, and that global self-judgments with respect to the complex paragraph may obscure important individual differences in value orientation.

D. SUMMARY

This study was designed to discover and identify clusters of individuals who share various notions about the kind of life they would like to lead. Use was made of Morris' WAYS TO LIVE document as a source of propositions for Q sorting by 50 young, educated adults. It was anticipated that meaningful clusters different from those dimensions found by Morris' in his original factor analysis would emerge, reflecting different value orientations toward the world. It was also anticipated that commitment to values covary with control, affection, and inclusion behavior. The anticipations were realized in the identification of six value orientations that in turn are related to expressed behavior.

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A COMPARISON OF SOCIAL-DISTANCE SCORES
AMONG COLLEGE-STUDENT SAMPLES*

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A. INTRODUCTION

The concept of "social distance" has had wide acceptance and use since Bogardus (2) introduced the term with a scale for assessing it. Social distance may be regarded as the degree of sympathetic understanding that exists between persons and groups (3). A large degree of social distance indicates little understanding or acceptance of a group or its individual members, while a small amount of social distance implies "fellow-feeling," acceptance, and sympathy. It is assumed that a large amount of social distance is related to prejudice and stereotyping.

The social-distance scores of Negro and white college students (in Georgia) toward a number of ethnic groups have been compared by Gray and Thompson (5). Toward all the groups included in the scale (except Negroes), Gray and Thompson found greater social distance expressed by Negro students than was expressed by white students.

Since Gray and Thompson's study, a number of events have occurred in Georgia that should have considerable bearing on the question of race relations and social-distance attitudes: the integration of several state-supported colleges and one private institution; the limited integration of the Atlanta public schools; and the widespread efforts throughout the state to desegregate public transportation, restaurants, and recreational facilities. These events, the extensive publicity involved, and the reactions of public officials, newspapers, and various groups have focused tremendous attention on the area of race relations. Because of this emphasis and the resulting interest or threat, it was felt that the present study might point up recent trends in social-distance attitudes and serve as a basis for assessing any changes since 1953.¹ The hypotheses of this study are as follows:

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¹ The degree of tension still existing may be evidenced by the fact that two of the psychologists who aided in the collection of data requested that the schools they represented be not clearly identified.

1. There are differences in social-distance scores among students enrolled in different Georgia colleges.
2. There are differences in social-distance scores between samples of college students in Georgia in 1953 and 1962.

B. METHOD

1. Subjects

Five groups of students enrolled in introductory-psychology courses in four Georgia colleges served as subjects:

- a. *Group 1.* 90 students at a private coeducational Negro college (referred to hereafter as *Negro*).
- b. *Group 2.* 80 students at a coeducational state college (referred to as *Coed*).
- c. *Group 3.* 51 students enrolled in a nursing program taking regular introductory courses at the above-indicated college (*Nurse*).
- d. *Group 4.* 76 students at a largely male college (*Male*).
- e. *Group 5.* 48 students at a woman's college (*Female*).

The preceding colleges were chosen to make possible comparisons and contrasts with respect to racial differences, state supported *versus* private colleges, and coeducational *versus* male or female institutions.

The median ages of the subjects and their median class standings are shown in Table 1. Preliminary investigation indicated no significant differences be-

TABLE 1
AGE AND CLASS STANDING* OF THE SUBJECTS

Median	Negro (<i>N</i> = 90)	Nurse (<i>N</i> = 51)	Subject group Female (<i>N</i> = 48)	Male (<i>N</i> = 76)	Coed (<i>N</i> = 80)
Age	19	18	19	20	19
Class standing	So.	Fr.	So.	Jr.	So.

* Fr. = freshman, So. = sophomore, Jr. = junior.

tween men and women in the two coeducational groups in age, class standing, or social-distance scores; so the scores were combined for analysis.

2. Administration

The Bogardus Social-Distance Scale given to the subjects included 26 ethnic, religious, and political groups, as listed in Table 5. Gray and Thompson (5) used 16 of these groups.

The scales were administered to each group of subjects during class by the regular instructor who used standard instructions. The subjects were in-

structed to think of an "average member" of each of the groups and to indicate their attitude toward this "average member" on an eight-point scale as follows:

1. Spouse—I would be willing to marry or have members of my family marry a person in this group.

2. Roommate—I would be willing to have a person of this group as a roommate or close companion.

3. Friend—I would be willing to have a person of this group as a member of my club, fraternity, sorority, or as a good personal friend.

4. Neighbor—I would be willing to have a person of this group live in the same neighborhood, live close to me as a neighbor, or own property close to mine.

5. Associate—I would be willing to have a member of this group as a student in my school or work with me in a place of business.

6. Social Equal—I would be willing to grant a member of this group the same privileges I have: eating in the same restaurants, admitted to the same theaters, hotels, etc.

7. Citizen—I would be willing to have a member of this group as a citizen of this country, but not as a social equal.

8. Exclusion—I would prefer to exclude a person of this group from this country except for visits as a tourist.

The ratings were summed for each subject, giving a total score. The higher the score, the greater the social distance.

The scale was administered to a total of 349 students, with four records being discarded because of failure to follow directions or to complete the scale.

C. RESULTS

The means and standard deviations for the five groups are shown in Table 2. The average social distance is the highest for the Negro group, intermedi-

TABLE 2
MEANS AND STANDARD DEVIATIONS ON THE BOGARDUS SOCIAL-DISTANCE SCALE

Parameter	Negro	Nurse	Subject group		Coed
			Female	Male	
Mean	111.46	99.49	83.63	82.44	82.22
SD	26.63	23.12	27.80	31.34	28.39

ate for the Nurses, and lowest and very similar for the Female, Male, and Coed samples. The fact that the Nurse and Negro groups have the lowest standard deviations indicates relatively higher homogeneity of opinion concerning social-distance values.

The results of an analysis of variance are given in Table 3. Because

TABLE 3
ANALYSIS OF VARIANCE OF BOGARDUS SOCIAL-DISTANCE SCORES

Source*	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between means	54760	4	13690	17.7	< .001
Within groups	264578	340	773		

* Total mean = 92.64.

F is significant beyond the .001 level of confidence, the first hypothesis—which stated that there are differences in social-distance scores among students enrolled in different Georgia colleges—can be accepted.

To test the significance of the differences between groups, an analysis was made by Tukey's *t* [see Edwards (4)]. The results are shown in Table

TABLE 4
ANALYSIS OF DIFFERENCES AMONG GROUP MEANS BY TUKEY'S *t**

Group	Mean	Difference between means of adjoining groups	<i>p</i>
Negro	111.46		
Nurse	99.49	11.97	.05
Female	83.63	15.86	.05
Male	82.44	1.19	n.s.
Coed	82.22	.22	n.s.

* Significant gap (at the .05 level) = 9.30. $S_{\bar{p}} = 3.35$.

4. Within the five groups of subjects, there appear to be three distinct populations. The Negro subjects differ significantly from the four white groups, and the Nurse group also differs significantly from each of the other groups. The Female, Male, and Coed groups show no difference among themselves; and the similarity of their means is striking, considering that these three groups differ in sex and that their institutions differ in relative amounts of liberal-arts emphasis, as well as in being publicly or privately supported. The similarities contrast with Stephenson and Wilcox's findings (7) of significant differences in social-distance scores between students in different colleges in the same university.

The mean responses of the subjects to each of the 26 groups used in the Bogardus Scale was calculated to allow comparison with the student responses in 1953. These scores are shown in Table 5. The Coed, Male and Female groups are similar in their rankings, showing the least social distance toward Protestant, Democrat, English, Republican, and Canadian groups; and the most social distance toward Socialists, Negroes, and Communists. The Negro subjects show the greatest social distance toward Communists

TABLE 5
MEAN PLACEMENT OF BOGARDUS GROUPS

Group	Coed	Male	Female	1953* White	Nurse	Negro	1953* Negro
Protestants	1.31	1.02	1.06	—	1.43	3.01	—
Democrats	1.40	1.40	1.43	—	1.86	3.42	—
English	1.46	1.41	1.37	2.0	1.35	2.82	4.3
Republicans	1.42	1.44	1.53	—	2.11	3.54	—
Canadians	1.83	1.55	1.82	1.8	2.17	3.41	4.6
French	1.95	1.77	1.94	2.6	2.33	3.14	4.5
Swedes	2.07	1.77	2.02	2.7	2.41	4.33	5.7
Irish	1.93	2.00	2.06	—	1.94	4.17	—
Germans	2.48	2.01	2.19	2.8	3.49	5.33	6.0
Catholics	2.30	2.13	2.55	—	2.80	3.03	—
Mormons	3.18	3.02	2.91	—	3.69	5.51	—
Jews	3.06	3.26	2.97	—	3.62	4.12	—
Alaskans	3.23	2.57	3.21	—	3.70	3.98	—
Greeks	3.11	3.20	3.43	3.7	3.58	4.62	5.1
Italians	3.19	3.19	3.60	3.4	3.25	3.40	4.8
Japanese	3.36	4.06	3.89	4.5	4.37	4.72	4.7
Chinese	3.53	4.12	3.77	4.2	4.52	4.96	5.1
Russians	3.87	3.31	3.83	4.6	5.84	6.84	6.8
Filipinos	3.60	3.64	4.20	3.6	4.62	4.37	4.4
Mexicans	3.67	4.40	4.38	4.5	4.74	3.91	4.5
Puerto Ricans	4.10	4.58	4.14	—	4.65	4.28	—
Cubans	4.08	4.65	4.72	3.9	4.78	5.14	4.2
Arabs	4.32	4.74	4.19	4.9	5.29	5.16	5.3
Socialists	5.08	4.89	4.22	—	6.40	5.45	—
Negroes	5.55	5.20	5.49	4.2	6.59	1.45	1.0
Communists	6.67	6.97	6.79	—	7.88	7.56	—
Means	3.15	3.17	3.22	—	3.82	4.29	—
Means of the 16 groups used in the 1953 study	3.20	3.27	3.39	3.5	3.96	4.24	4.7

* The original data from the Gray and Thompson Study (5) are not available. The figures given here were estimated from a chart given in the published study.

and Russians; but tend to indicate more distance than do the white subjects toward most of the groups on the scale, giving an average placement of less than three to only two groups—Negroes and English.

In attempting to compare the results of the present study with the 1953 results, it was necessary to estimate the 1953 figures from a chart in the article by Gray and Thompson (5). Because the accuracy of the estimates could not be determined, no effort was made to calculate the significance of any differences.

Table 5 gives the estimated average ratings made by the 1953 subjects. The three regular college groups—Coed, Male, and Female—show lower mean ratings than the 1953 students. The ratings given to all 16 groups have either decreased or remained the same, with three exceptions: Filipinos, Cu-

bans, and Negroes. Similarly, in the present study, the average social-distance placement by Negro students is lower, with only two groups—Cubans and Negroes—showing an increase in social distance.

D. DISCUSSION

Several writers report that prejudice often tends to be greater on the part of the person receiving prejudice [see Allport (1)]. The Negro subjects in the present study not only make a significantly higher total score; but also show greater social distance than do white students toward every group on the scale (except toward Negroes and Mexicans). On superficial inspection, therefore, the Negro subjects do appear more prejudiced. However, it should be noted that the scale is heavily weighted with white ethnic groups that would be expected to lower the overall score for the white subjects and perhaps raise it for the Negro students. To determine the possible effect of this weighting, scores were computed toward the seven ethnic groups on the scale that should be relatively "foreign" to the identification and experiences of both white and Negro students. These were the Japanese, Chinese, Filipinos, Mexicans, Puerto Ricans, Cubans, and Arabs. The summed scores, computed only for the preceding groups are Nurses, 32.97; Negro, 32.54; Male, 30.19; Female, 29.29; and Coed, 26.66. The three regular white college groups again show the least social distance, but the Nurse group now shows more distance toward the seven ethnically "foreign" groups than does the Negro group. The higher scores made by the Nurses hardly can be explained by their having received more than their share of either racial or religious prejudice. Neither is this discrepancy due to a difference in college or academic program because they were enrolled in the same college as the Coed group and are taking similar courses. Finally, the Nurses, more obviously than any of the other groups of subjects, have entered training for an occupation in which they are expected to be involved with the welfare of others; hence might be expected to show respect for and sympathy towards members of other groups.

In attempting to find an explanation for these perplexing findings, it is necessary first to describe the background of the Nurse students and then to look for other similarities in the results between the Nurse and Negro responses.

On the average, the Nursing students are younger than any of the other subjects (Table 1). They tend to come from more rural areas and from lower socioeconomic backgrounds than the regular white students. The overwhelming majority (between 90 and 95 per cent) describe themselves as Democrats

and Protestant (1963). The Negro students are also probably of a lower socioeconomic level than the other three regular college groups; but are similar in age, variety of religious and political affiliations, and geographical spread.

Table 5 shows that, in several respects, the Nurse responses are more similar to those of the Negro subjects than to those of the other three groups. In the first place, both Nurse and Negro rankings of Germans, Russians, Arabs, Socialists, and Communists are relatively extreme. (The 1953 Negro subjects also gave very high ratings to Germans and Russians.) It is possible to interpret this result on the basis of stereotyping, perhaps in response to a rather generalized and naive perception of threat available from family or culture, and so far (in many of these subjects) unmodified by education, broader experience, or involvement with current international events. (The reasons for seeing several of these groups as "bad" appear to be more historical than current.) Also, the fact that both the Nurse and the Negro groups had relatively low standard deviations (Table 2) may be seen as evidence of stereotyping.

Table 5 also shows both the Negro and the Nurse subjects to express less social distance toward the English than toward other groups presumably much closer to "home": Protestants, Democrats, and Republicans. Possibly, the great social distance toward these groups reflects the Negro student's feeling—at least in Georgia—that these groups are relatively alien to him or are identified as "white." However, both the Nurse and the Negro subjects show some reluctance to rate as marriageable members of groups to which they themselves belong. In tabulating the responses, it was found that a fair proportion (10 to 15 per cent) of the scales completed by both the Nurse and the Negro subjects had no group checked "1" (willing to marry), and some of these papers had no group checked as high as "2" (willing to room with). On the other hand, almost none of the papers of the other three groups showed a similar suggestion of celibacy and isolation. Because almost all the Nurses identify themselves as Protestants and Democrats, and because almost all of them were rooming with someone with the same characteristics, their refusal to indicate willingness on the scale to accept Democrats or Protestants as prospective spouses or roommates is confusing. The most plausible explanation for this apparent contradiction is that some Nurses come from environments in rural or semirural Georgia that are almost exclusively Protestant and Democrat (1963). Belonging without question to these groups, and having had little experience with other groups that would present them with contrasts or choices, they have never had to think about their membership in an objective way. If it is assumed that each person and everyone with whom he

makes social contact belongs to a certain group, then specifying this person as holding this group membership indicates something peculiar. (For example, "I'd like you to meet John. He's an American.") Therefore the labeling of someone as Democrat or Protestant (with capital letters) may have been interpreted by some Nurses as denoting the more extreme or rabid practitioners of the groups. It is assumed that the Negro subjects may have had similar reactions to "Negroes" on the scale.

If the preceding observations are correct, then the higher overall social-distance scores on the part of the Negro and Nurse groups cannot be attributed predominately to their having been the recipients of prejudice. Rather, a considerable portion of the higher scores appear related to a generalized, naive acceptance of stereotypes available in regional or cultural groups—an acceptance that appears to be a function of the limitation inherent in lower socioeconomic environments, with a concomitant lack of correcting educational or personal experience. The study by Westie (8) seems to support this interpretation. A second implication is that considerable care should be exercised in choosing the groups to be included in a Bogardus-type scale, so that the results will not be an artifact of the selection.

In comparing the ratings obtained in the present study with the ratings made in 1953 (Table 5), it is seen that the relative rankings of the groups have remained similar. An increase in distance toward Filipinos is found in the Female group; but not in the Coed or Male ratings, and may reflect a chance variation. It is understandable why an increase in distance toward Cubans has occurred. However, at the same time, it appears that a certain amount of sympathy is extended to Cubans as they begin to filter into the urban areas in Georgia. (Possibly the attitudes may be summarized as follows: the Cubans in Cuba are bad Cubans, the Cubans in this country are good Cubans, at least as long as there are relatively few of them.)

The increase in social distance towards the Negro on the part of the white students is of most significance and in need of considered interpretation. (The increase in the amount of social distance of the Negro subjects toward Negroes was discussed earlier.) First, it appears that the increase in social distance toward the Negro (from 4.2 in 1953 to about 5.4 on the part of the three regular college white groups in 1963) may be more apparent than real. It is doubtful that the students in 1953, now 30-year-old property owners, would view with equanimity a Negro family moving in next door. Yet this is what their average rating indicates. It is possible that in 1953 ratings were made with much more certainty that Negroes would *not* be neighbors or school-mates or social equals. In the present study, the ratings represent realistic

appraisals of events. The students in the Coed, Male, and Female samples presently are either in integrated schools or will be in one or two years. At the present time (1963) Negroes have integrated many restaurants, hotels, theaters, parks, libraries, etc.; and appear to be moving slowly if painfully toward social equality. The ratings of the three white college groups appear to concur with the Negro's main demands: equal citizenship, educational, and occupational rights. In return, the Negro subjects' ratings toward the white ethnic groups on the scale show an average placement of "3"—*friend*, with some groups being rated "4" or occasionally "5"—*neighbor* and *associate*. It appears that the Negro student is indicating a wish for personal relationships with members of white ethnic groups, but hardly shows the desire for intimacy or intermarriage attributed to him by some Southern politicians.

At present, then, there is a discrepancy of about two scale steps between the Negro subject's average rating of "3" toward white ethnic groups and the white student's average rating of "5" toward Negroes. The average white subject indicates a willingness to grant the Negro his demand for education, equal-employment opportunities, and use of public facilities. However, there is an unwillingness to accept a more personal or social type of relationship. The average Negro student indicates a desire to be accepted on an individual basis, but avoids any expectation of intimacy. The halfway point between these two positions appears to be the "4" rating—*neighbor*. It is true that housing represents one of the most explosive racial issues at present (1963). How willing will both groups be to "give" on their present positions and meet, possibly here? (It must be remembered that the subjects in this study represent the upper one-third of Georgians in average socioeconomic level, intelligence, and education. It is not suggested that their attitudes are representative of the entire state, but rather of persons who may fill leadership positions in the future.)

It appears that the overall consistency of ratings from 1953 to the present agrees with data from other studies, such as that by Katz (6), that find that social-distance attitudes toward specific groups (as measured by the Bogardus Social-Distance Scale) reflect stable, culturally accepted attitudes, held in stereotyped ways that do not deviate very much over time—outside influences being equal. The present study suggests that overall social distance may decrease slightly over time, probably as a function of increased sophistication, education, and experience. Changes in social distance toward a specific group may reflect not only nationalized attitudes, but also may indicate increased experience with and more realistic knowledge of a group. The overall decreases in the Bogardus ratings since 1953, and the average willingness of the subjects in the present study to accept the recent Negro demands may be in-

terpreted with muted optimism. The extent to which the Negro and white leaders are able to move toward each other in compromise, housing being a major area suggested in this study, will be increasingly important over the next few years.

E. SUMMARY

A Bogardus Social-Distance Scale, including 26 ethnic, religious, and political groups, was given to 345 students enrolled in five different collegiate programs in Georgia. Students in a Negro college showed the highest overall social distance, followed by white Nursing students. Three groups of white students in three different colleges made similar scores and showed the least social distance. The average scores of both Negro and Nurse groups differed significantly from each other and from those of each of the three other groups.

Inspection of the data suggested the hypothesis that the difference in scores might be best explained by socioeconomic factors that have resulted in less experience with various groups; hence increasing stereotyping and naivete.

A second part of the study compared the present scores with those of a 1953 study using white and Negro college students in Georgia. An overall decrease in social distance was found except for attitudes toward Cubans and Negroes. It was felt that the increase in social distance toward Negroes did not indicate an increase in prejudice, but rather a more realistic response. The implications of the results for present race relations were discussed.

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THE RELATIONSHIP BETWEEN SOCIOMETRIC MEASURES OF POPULARITY AMONG CHILDREN AND THEIR REACTIONS TO FRUSTRATION*

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A. PURPOSE

The characteristic manner in which children perceive social situations, particularly those of a mildly frustrating nature, should be related to their interpersonal effectiveness. Several published studies have used a variety of approaches to assess subject variables in relation to social success among children and adults. Sociometric techniques were commonly employed as the criterion device, and various structured and projective personality tests were utilized to determine personality correlates (3, 6, 8). Although these researches have uncovered numerous relationships, to the authors' knowledge only two studies have utilized a direct measure of reactions to frustration in comparison with sociometrically derived estimates of popularity. One of these studies found that college women of high social status are characterized by high intropunitive scores ($r = .41$) on the Rosenzweig Picture-Frustration (P-F) Study (7). However, the effect of the authors' use of linear correlation as well as allowing a one-year lapse between sociometric estimates and P-F Study testing remains unknown. The other study divided 145 children into three groups (high, middle, and low) on the basis of whether they scored above, at, or below chance in the number of sociometric choices they received from their peers. For the members of each group, P-F scores were compared; and significant differences between the mean scores of the three groups were reported (2). The failure of the author to use correlational methods or to separate the children on the basis of sex may have obscured important relationships. Research on sociometric techniques has revealed that utilizing multiple criteria upon which choice is based produces a unique sociogram for each criterion (4). Prior studies have employed single criteria rather than multiple criteria of popularity.

The present study attempts to overcome the foregoing limitations in exploring the relationships between sociometrically determined popularity of chil-

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dren and the way in which they use and direct aggression in their reaction to frustrating situations, as revealed by performance on the Rosenzweig Picture-Frustration Study (9).

B. PROCEDURE

The instruments used in this study consisted of a five-item questionnaire¹ and the Rosenzweig P-F Study. Subjects were asked to make three positive choices to each of the five items on the questionnaire. Equal weight was assigned to each of the three choices. The five items were as follows: (a) Whom do you most like? (b) Whom do you think is the most cooperative? (c) Whom do you think the counsellors like? (d) Whom would you most like on your side in athletic competition? and (e) With whom would you most like to discuss your personal problems? The P-F Study (revised form for adults) was scored according to Rosenzweig's standard scoring procedure (9). Subjects were 126 children (52 boys and 74 girls) between the ages of 10 and 14 who were attending a session at the UAHC camp in Kresgeville, Pennsylvania. They were homogeneous in racial and religious backgrounds and came from homes above average in education and socioeconomic status. Testing was conducted in the children's cabins on the 10th day of camp. The children rated only the six to 12 members of their own cabin, the names of whom were posted for their convenience. Instructions stated that responses would be "secret" and would help the staff "plan better group programs in the future." P-F tests were given following the collection of the completed questionnaires. Scores on each item of the questionnaire were based on the total number of choices that a child obtained and adjusted for differences in size of cabin by the constant frame-of-reference technique (1).

C. RESULTS

From the seven P-F categories and the five sociometric criteria, 30 bivariate tables and scatter diagrams were prepared for the boys and 30 for the girls. The scatter diagrams were examined in sets according to P-F scoring categories. The highest relationships were found between need persistence and each of the sociometric criteria, and between intropunitiveness and most of the criteria. The semiinterquartile range of the column arrays clustered about the column means in a characteristic trend. In no case did a trend appear linear, therefore eta (a measure of curvilinear relationship) was chosen.

¹ The five items were selected from an earlier 50-item questionnaire. Item analysis revealed that these five items covered the essential material contained in the original questionnaire.

Relatively high η s² were found (see Table 1), giving support to the curve trends suspected.

The need-persistence category shows more significant correlations with sociometric criteria than does any other P-F category. All five need-persistence curves follow an inverted U shape. The curves are skewed slightly negatively, indicating that Ss who are just above the mean in need persistence receive most nominations. All five criteria exhibit the same curve trend for boys, but the curves for girls are less pronounced, and η s for girls are not significant.

Children who give either too little or too much of their attention to the solution of everyday problems are less popular in the eyes of their peers than those who exhibit an average or slightly greater-than-average degree of this quality. Furthermore, the child with an unusually high degree of drive may represent a threat to his peers, whereas the child who is low in need persistence may displace his energy into forms of behavior characterized by blame placing or complaining, with a repelling effect on his peers.

Intropunitiveness is correlated with most of the sociometric criteria, but only for boys. A U-shaped curve was found for three of the five criteria. The question "Whom would you most like on your side in athletic competition?" yields an L-shaped curve with many nominations for Ss low in intropunitiveness. The criterion that shows no apparent relationship to intropunitiveness was "Whom do you think is most cooperative." Examination of the curve suggests that an average score in this category leads to few popular nominations, but nothing can be said with confidence for the extremes in intropunitiveness.

It is clear that the preferred children are those who exhibit few intropunitive responses or, to a lesser degree, those who have high scores in intropunitiveness (this arm of the curve does not go up as high as the other). Self-blame may be perceived as an indication of weakness at an age when motor skills and strength are highly valued. It is noteworthy that, in a previously mentioned study of college women, high score in intropunitiveness was found

² Too much dependence cannot be placed on the correlation ratio alone because it has several weaknesses (5). First, η is computed in terms of deviations from column means and this fact may entail considerable error from the true column means. In particular, the present study affords too few values for extreme P-F scores. Also, when the data are grouped into a large number of columns, this in itself will spuriously inflate η . Correction formulas for overcoming the latter are not entirely satisfactory. Consequently, η was not relied on as a primary basis for interpreting the data. Therefore, the scatter diagram was examined to determine whether or not the column arrays clustered around column means in some characteristic trend, supported by a high value of η .

TABLE 1
CORRELATION RATIOS (ETAS) BETWEEN ROSENZWEIG RESPONSE CATEGORIES AND SOCIOMETRIC CRITERIA
(*N* = 52 boys, 74 girls)

Sociometric criteria	Extra- punitive		Intro- punitive		Rosenzweig P-F Categories				Ego defense		Need persistence	
	Boys	Girls	Boys	Girls	Impunitive		Obstacle dominance		Boys	Girls	Boys	Girls
Friendship choice	.34	.39	.55	.20	.21	.42	.30	.31	.34	.31	.63	.16
Cooperation	.40	.34	.28	.32	.28	.33	.33	.28	.44	.36	.61	.27
Counselor preference	.42	.38	.47	.38	.43	.33	.21	.57	.46	.44	.49	.20
Athletic choice	.56	.46	.60	.29	.26	.32	.33	.36	.41	.33	.30	.37
Confidant choice	.35	.42	.60	.27	.46	.48	.39	.49	.43	.42	.53	.31

to be positively correlated with social status; whereas the present study does not confirm this finding. This suggests a shift in values regarding this quality, with increased maturation for females. The L-shaped curve for the question concerning choice in athletics is corroborative of the interpretation that it is the boy in his tendency toward self-censure who is most highly regarded by other boys of his age, but high score did not beget selections. It might be added that the *etas* for extrapunitive choice in athletics is significant for both girls and boys, but no substantial support for the *etas* was found in the analysis of trends on the scatter diagrams.

D. SUMMARY

The present study attempted to overcome certain limitations of earlier ones in examining qualities assessed by the Rosenzweig P-F Study in relation to sociometric indices of popularity among children. In other studies, use of statistical procedures, such as simple *t* tests or linear correlation, do not appear to be adequate for handling such complex data. A combination of correlation ratio (*eta*) with scatter diagrams was used in analyzing the results of the present study and revealed that two of the P-F categories exhibit a consistent relationship with the various criteria. These categories are need persistence and intropunitiveness. The curves for these two categories are similar for all criteria; thus no support for the use of multiple criteria in sociometric studies of popularity was found, because unique curves for each criterion for a given scoring category were not in evidence. In general, sex differences were found in the sense that the significant relationships disclosed were predominantly for boys rather than for girls.

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A LONGITUDINAL STUDY OF SOCIOMETRIC CHOICE AND THE COMMUNICATION OF VALUES*¹

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A. INTRODUCTION

A review of the literature discloses few longitudinal studies of sociometric preferences and, with notable exceptions [Newcomb (12), Sherif and Sherif (18)], those reported are based on long-term acquaintances. In a longitudinal study of preferences, it appears necessary to make several assumptions concerning the nature of sociometric choices in newly formed groups if one is to study the influence of value-structure similarity upon sociometric choice. These assumptions are (a) that such choices are reasonably stable; (b) that variables other than propinquity are important in the determination of choices; (c) that possession of similar value structures enhances communication; and (d) that individuals in the group are motivated to interact with each other.

These propositions are complicated by a number of other possibilities. For example, the individuals' perceived sharing of values may differ from their actual sharing of values. (For purposes of this paper, value is defined as the worth or excellence ascribed to an object or activity.) The predictions individuals initially make about each other may be based on an attribution of their own values to each other if they are friends or on an attribution of the opposite of their values to those who are not friends; thus the success of communication of values is important in determining the accuracy of such attribution, the subsequent expectancies that the individuals have of each other, and eventually, the course of the relationship. As Festinger points out (4), the values of an individual vary in importance to him and consequently dissonance in less-important values can be tolerated or ignored. (In a social situation an individual may judge on the basis of several interrelated values.)

If the assumptions in the preceding paragraph are correct, one ought to be

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able to account for a change in individuals' relationships on two communication levels: (a) simple agreement on specific values that are especially important in the early stages of a relationship and (b) a more complex interrelationship of value statements from a number of content areas in which the underlying value dimensions are of greatest importance and which require considerable acquaintance to be adequately communicated. Under this condition, the judgment will be located in some sort of value hyperspace, and dissonance might also occur when individuals do not apply their values in the same dimensions when making a judgment, irrespective of the conclusion reached.

In an attempt to study some of the foregoing assumptions, the following hypotheses were formulated:

1. In the initial stages of a relationship, the attraction people have for each other is dependent upon the extent to which they share specific values.
2. After people have had an opportunity to communicate over a period of time, their attraction for each other is dependent upon the extent to which they share value dimensions.
3. Individuals who express positive attraction toward another person tend to attribute their own values to this other person (or the converse, if negative attraction is expressed).
4. When individuals do not agree on their attraction for each other, their expectancies of each other are in accord with their feeling of attraction or nonattraction.

B. METHOD

1. *Subjects*

Five social groups composed of three fraternity-pledge classes, ($N_s = 12$, 14, and 19), one nonuniversity student-nursing class ($N = 13$), and one group of university girls living in a "cooperative" house ($N = 21$) participated in this study. Except for the last group (composed of freshmen, sophomores, juniors, and seniors aged 17 to 21), the groups were composed only of freshmen, and only individuals living in the same house were included in a given research group. Most group members had little previous acquaintance with each other, but were encouraged to associate more with others within their own group than with members of other groups.

2. *Instruments*

The sociometric measure used is similar to that used by Jennings (7) and consisted of a list of group members on which S was asked to indicate four positive choices (e.g., "my best friend," "my next best friend," etc.)

and four negative choices (e.g., "the person who most appears to dislike me," "a person with whom I feel most uncomfortable," etc.). Acquaintances not rated by *S* are assumed to be those with whom he had relatively little interaction and toward whom he feels relatively indifferent. For most analyses, *S*'s choices were labeled L (for likes), D (for dislikes), and N (for neutral). Since many *S*s do not make negative choices of acquaintances (16), *S* was asked to choose a fixed number of people both positively and negatively. Depending on group size, these choices accounted for approximately 40 to 65 per cent of the group members.

Three questionnaires were developed by the author for this study. Questionnaire I (QI) consisted of a wide variety of statements designed to tap many attitudes. Examples are "I like to be loyal to my friends," "I like to tell amusing stories and jokes at parties," and "I like to plan and organize the details of any work that I have to undertake." Questionnaire II (QII) consisted of six groups of items judged homogeneous by two advanced-psychology graduate students. Examples are "I love to go to dances," "I usually take an active part in the entertainment at parties," "I think I am stricter about right and wrong than most people," and "I believe we are made better by the trials and hardships of life." On the foregoing questionnaires, the items were presented in pairs or triplets, and the subject was asked to choose between or among the members of the pairs or triplets to permit the measurement of value dimensions. Questionnaire III (QIII), a short 35-item questionnaire designed to measure specific values, consisted of a group of heterogeneous items taken from the California Psychological Inventory. This questionnaire is called a specific-value questionnaire because *S*s considered the statements independently rather than in relationship to other statements, as on QI and QII. On QIII, *S* was asked to agree or disagree with each item.

3. Procedure

*S*s were tested three times: once, about a week after their group was first formed; again, about three months later; and a third time, approximately seven and one-half months after the first testing. To enhance cooperation, the groups were offered a small sum of money for each *S* who completed the study. At the first testing, *S*s completed all three questionnaires and made the sociometric ratings. At the second testing, *S*s made a second set of sociometric ratings and were asked to complete QIII as they felt two *designated* people in their group might complete it. These two people were designated by the experimenter on the basis of their having expressed a liking or a disliking for

the *S* on the first set of sociometric ratings, and the *S* in turn having expressed a liking or disliking for them. When possible, individuals were designated who did not agree on their feelings toward each other (31 of the 108 combinations). Further, an *S* asked to rate someone whom he liked was also asked to rate someone whom he disliked. After completing the specific-value test as two other people would complete it, *S*s were asked to complete the test for themselves. At the last testing, sociometric ratings were secured from three of the five groups.

On the basis of the sociometric ratings, a pair of *S*s would be classified as mutual likes (*LL*), mutual dislikes (*DD*), mixed like-dislike (*DL*), mutual neutrality (*NN*), dislike-neutrality (*DN*), or like-neutrality (*LN*). These pairs were classified for each of the three sets of sociometric ratings. For each pair, the colinearity or noncolinearity of *QI* and *QII* was determined by a method given by Runkel (16). In this method of testing the dimensional location of a set of judgments or values, *S*s are asked to order statements by indicating which of the group of statements they agree with the most; which the least; etc. An order similar to a simple rank order is obtained, and an "unfolding" technique enables one to make a comparison of the two orders of stimuli to determine whether or not the ordering is equivalent (i.e., colinear) regardless of which stimuli the individuals most preferred. In this system, the order 1-2-3-4 is equivalent to the order 4-3-2-1 but not, for example, to the order 1-3-4-2. In the "unfolding" method, the primary consideration is whether or not two sets of stimuli can be ordered in the same logical sequence, regardless of the initial arithmetic direction of the ordering. This method of comparison also preserves the nearness of the origin of the ordering to some reference point. Thus, two individuals located at different points on a complex-attitude continuum can order stimuli in a comparable fashion despite the differences in their preference for a given stimulus. In this study, colinear *S* pairs were assigned a score of one, noncolinear pairs were assigned a score of zero, and the scores were summed over the subsections of the questionnaire.

For *QI* and *QII*, *S* pairs were also compared on the basis of the sum of the absolute differences between ranks assigned to the items on the subtests. For *QIII*, the percentage of item agreement was determined for each pair; and this figure was placed in the sociometric classification of that pair. The percentage of item agreement on the first administration of *QIII* was determined for pair classifications on the first, second, and third sets of sociometric ratings. For the second administration of *QIII*, pairs were classified only on the second set of sociometric ratings. The percentage of agreement was

determined for the *designated* individuals in two ways: (a) *S*'s responses and his expectations of the other individual's responses; (b) *S*'s expectations of others' responses and the other individual's actual responses. All of the results were subjected to analysis of variance.

C. RESULTS

Perhaps the most unexpected finding is the marked shift in *S*'s preferences for each other. These findings are illustrated in Table 1 for the groups that

TABLE 1
STABLE SOCIOMETRIC CHOICES (IN %) OF ONE GIRLS' COOPERATIVE (GROUP 02)
AND TWO FRATERNITIES (GROUPS 04 AND 05) ON TESTS 1 AND 3

Social group	Sociometric choice					
	LL	DD	DL	NN	ND	NL
02	35.7	36.4	22.2	32.4	20.0	12.8
04	33.3	0.0	0.0	45.7	33.3	25.0
05	50.0	14.2	0.0	20.0	29.4	0.0

were tested three times. As might be expected, the attraction-nonattraction pairs (DL) were most apt to shift their preferences, while the mutual-attraction pairs (LL) and the mutual-neutral pairs (NN) were least apt to shift. Only a small number of *S*s expressed the same preferences for each other throughout the study. However, groups of *S*s did tend to exhibit relative consistency from the time of the first sociometric rating to the third, in terms of the numbers of pairs of individuals found in each of the six possible types of sociometric relationships—even though the individuals comprising the pairs tended to change from one testing to another.

As indicated in Table 2, the predictions from Hypothesis No. 1 are supported; that is, in the initial stages of a relationship, the attraction that people have for each other seems to be dependent in part upon the extent to which they share the specific values measured by QIII. However, for the colinearity indices of QI and QII, which measure value dimensions, only two of 10 *F* tests are significant, suggesting that these values may not be different from chance. This result would be expected if value dimensions are more difficult to communicate.

There is limited support for Hypothesis No. 2 which predicts that after a period of acquaintance attraction is dependent upon the sharing of the value dimensions measured by QI and QII. The colinearity indices in Table 2, for instance, do not yield significant results for longer acquaintance periods. Table 3, however, which contains the sum of the differences between values

TABLE 2

F TESTS FROM ANALYSIS OF VARIANCE OF SOCIOMETRIC CHOICES AND MEASURES OF VALUES^a

Social group	Sociometric rating	First administration of QIII	Second administration of QIII	Colinearity Index, QI	Colinearity Index, QII	df
01	First	—	—	2.37*	1.16	5,72
	Second	1.61	—	—	1.32	
03	First	—	—	1.30	1.92	5,60
	Second	1.82	—	—	—	
02	First	2.36*	—	2.66*	1.32	5,204
	Second	1.43	—	—	—	
	Third	1.70	—	—	—	5,184
04	First	1.13	—	—	—	5,165
	Second	3.62**	1.34	—	1.53	
	Third	2.93*	—	1.18	1.19	5,130
05	First	2.45*	—	2.07	1.11	5,85
	Second	2.51*	—	—	—	
	Third	—	—	—	—	5,49
Total	First	3.13**	—	—	—	5,615
	Second	2.24*	—	—	—	
	Third	3.28**	—	—	—	5,380
Stable choices	First	1.74	—	—	2.97*	5,100

^a $F < 1.00$ not shown.* $p < .05$.** $p < .01$.

TABLE 3

F TESTS FROM ANALYSIS OF VARIANCE OF SOCIOMETRIC CHOICES AND MEASURES OF VALUES^a
(F-Test Results on $\Sigma|D|$ of Ranks for each Subtest)

Sociometric rating	Questionnaire I Subtests					Questionnaire II Subtests				
	1	2	3	4	1	2	3	4	5	6
First	—	2.18	2.82*	2.64*	Total 2.44*	1.27	2.23*	2.13	1.98	2.62*
Second	1.19	1.21	1.20	—	1.96	1.38	—	—	3.10**	—
Third	—	1.95	—	—	1.11	4.11**	—	2.54*	2.45*	1.22
					Stable choices					
1	—	1.37	1.22	1.97	—	—	1.32	1.75	—	1.09

^a $F < 1.00$ not shown.* $p < .05$.** $p < .01$.

($\Sigma|D|$ ranks) on the subtests of QI and QII suggests that Subtests 2 and 5 of QII may be useful in predicting the attraction of *Ss* for each other over time. A re-examination of Table 2 in connection with Hypothesis 2 shows that the first administration of QIII, analyzed in terms of the second and third sociometric ratings, yields significant results; whereas the second administration of QIII (at the time of the second sociometric rating) does not. Thus, the colinearity indices derived from the questionnaires used

in this study seem to be of little value in differentiating social preferences regardless of the period of acquaintance. An analysis based on the $\Sigma|D|$ of ranks seems to have limited value; however QIII shows the greatest differences between various sociometric preferences irrespective of the length of acquaintance.

Analysis of responses to QIII indicates that in general LL pairs are more apt to agree on QIII; while DD pairs or DL pairs exhibit less agreement (pooled chi square = 246.6, $df = 175$, $p < .001$). These results suggest that QIII was efficient in differentiating sociometric choices. Individual items with a positive social content, such as "I like to go to the movies often," "I like to say what I think about things," and "I enjoy being with someone who is the life of the party," were the items that differentiated best. Items concerned with such things as planning, dress, and personal traits, such as worry, annoyance, admiration, etc., were less discriminating.

Table 4 indicates the frequency with which Ss stated they liked or disliked

TABLE 4
ANALYSIS OF FREQUENCY CHANGES OF Ss LIKING OR DISLIKING OF OTHER Ss

Social group	N	"Popularity" Index		"Unpopularity" Index	
		Tests 1 and 3 rho	Tests 2 and 3 rho	Tests 1 and 3 rho	Tests 2 and 3 rho
02	20	.40	.56**	.76**	.68**
04	17	.37	.39	.00	.63*
05	11	.25	.33	.52	.56

* $p < .05$.

** $p < .01$.

other Ss on each of the sociometrics ratings and shows rank-difference correlations between the frequency with which S was liked (a "popularity" index) and the frequency with which he was disliked (an "unpopularity" index). In general Ss tended to change their dislikes less than their likes. The group that lost the fewest members was considerably more stable on the indices.

Predictions from Hypothesis 3, which states that individuals who express positive attraction toward another person tend to attribute their own values to this other person, were analyzed in terms of the differences between the various types of sociometric choice. These choices were based on the percentage of agreement between what an S thought or expected another person would say in response to QIII and S's self-responses. The result ($F = 4.59$; $df = 5, 102$, $p < .01$) indicates that Ss differentially attribute values to another person, and that these attributions are derived from S's own values. Analysis of variance indicates that Ss who have LL relationships expect the persons in question to agree with them, and Ss who have DD or DL relationships

expect the persons in question to disagree with them, as predicted by Hypothesis 4. An analysis of pair scores, based on the percentage of agreement between the response *S* thought another person would give to QIII and the response the person gave is not significant ($F = 1.48$; $df = 5, 102$). This result suggests that the sociometric relationship between *S*s bears no relationship to the ability to predict accurately each others' responses and indicates that *S*s do not "empathize" with each other, regardless of the particular type of sociometric relationship they have. In other words, for the pairs in this group, the predictions did not have any basis in fact, but were more dependent on *S*'s own views of himself and what he thought the relationship was. This finding is similar to that reported by Sears (17) in his classic projection study.

D. DISCUSSION

One of the more important questions raised by the present study is why shifts in sociometric choice occur so frequently. Perhaps highly adaptable, socially mobile students differ from other groups. If students view their present experience as temporary, and their changes in social preference reflect a desire to avoid permanent attachments, it might be more profitable for one to study married couples who presumably make a choice based upon a rather long previous process of searching for agreements (13). However, since marriage presumably represents LL social preference, it would be difficult to obtain DD and other categories. The shifts may also imply that "best friends" of college students are in their home towns or outside of the groups studied. The most plausible explanation, however, is that students are socially oriented, and the formation of acquaintances in a like-sex group is similar to that prevailing in heterosexual dating behavior when the typical college student has a great many dates and often frankly states that he has no interest in permanent relationships, although he is interested in acquiring social skill. In discussing the experiment with each group after all testing had been completed, many individuals stated they did not believe their preferences fluctuated as much as the results indicated. The explanation that was most acceptable to them considered the shifting choices as a desirable social experience, and the analogy to dating behavior seemed especially apropos.

Although the sociometric choices are variable, there is considerable group consensus regarding individuals who are liked and those who are disliked. Other studies (1, 2) have found high consistency on popularity. In the present study, the greater stability of those who are "unpopular" suggests that either communication between the disliked individual and the members

of the group has always been poor or that the amount of the communication is reduced as the individual becomes disliked. Since individual pairs of *Ss* do not exhibit this stability, it must be assumed that *Ss* tend to be liked or disliked by approximately the same number of group members at any given time, but that the individuals who like or dislike a given *S* change over time.

A number of studies have attempted to assess personality variables and attitudes in relation to sociometric choice: some with positive results (3, 6, 9, 19); some with negative results (12, 14, 15). In this study, only one short questionnaire (QIII) differentiates between sociometric choices regardless of length of acquaintance. QII, on the other hand, did not show differences on newly formed acquaintances, but did for acquaintances who are stable for a period of time. Some of the contradictory results obtained by previous studies may be explained by variance in length of acquaintance and type of questionnaire.

In addition to the differences in agreement that various sociometric choices exhibit, there is also evidence that differential psychological processes occur between people who prefer each other and those who do not. Although Reilly (15) found that pairs' actual needs show almost no correlation whereas perceived needs show low positive correlations, this study suggests that LL pairs tend to attribute agreement of values onto each other; whereas DD and DL pairs tend to attribute disagreement to each other. This process seems to be "projection" because the members of the various types of sociometric pairs do not exhibit differential ability to predict the responses of each other. Since the members of none of the pairs seem to meet each other's expectancies any better than any other possible pairs, a gradual shifting of the projection onto other group members may occur as the initial projections or expectancies fail. This explanation is consistent with the relative constancy of the relationships within a group, while accounting for the shifts in individual relationships. The group in this study with a common dormitory for its pledge class had the highest proportion of constant friendships, a result that is consistent with Loether's finding (10) that reciprocal choices did not live together alone. Members of our other groups typically lived in two-person rooms. In the only group that had upper-class members seniors are found disproportionately often in the LL, DD, and DL constant pairs (five of 20 were seniors, eight of 11 pairs contained seniors, binomial test $p = .0013$).

Future researchers should compare a newly established group with a group that has been established for a period of time because the processes may be more readily ascertained in a group that changes less rapidly. Such an ap-

proach, coupled with the use of improved tests and interviews, might yield further insight into the processes of social interaction and communication.

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MEASURING THE CONNOTATIONS OF PERSONALITY TRAITS: A VALIDATION STUDY*

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A. INTRODUCTION

For measuring the connotations of personality traits, Shapiro and Tagiuri (1) have suggested a method that involves having *Ss* indicate how closely a stimulus trait is associated with each of a series of 59 other traits. A count of the number of significantly associated "other" traits provides an operational index of the connotative extensity of the stimulus trait. Stimulus traits with a greater number of associated "other traits" are said to have more extensive connotation than stimulus traits with fewer associated "other" traits. But what construct validity does this operational measure have? What are its empirical correlates? The present study is an attempt to answer these questions by showing how this operational measure of meaning has predictive value in the investigation of interpersonal perception.

Consider the case in which a *S* is asked to form an impression of a person from a set of stimulus traits. It is reasonable to assume that a set of stimulus traits with a great deal of connotative meaning will provide more information about the person than a set of traits with less connotative meaning. Likewise, it is reasonable to assume that one set of stimulus traits may have more extensive connotative meanings for some *Ss* than for others. It follows, then, that one set of stimulus traits describing a person provides various *Ss* with different amounts of information. We hypothesize, therefore, that if *Ss* are asked to write their impressions of a person described by a set of stimulus traits, the *Ss* for whom the stimulus trait set has more connotations will write more detailed and comprehensive descriptions than will the *Ss* who perceive less connotative meaning in the trait set. The confirmation of this hypothesis would provide construct validity for Shapiro and Tagiuri's method of measuring the meaning of the stimulus-trait set.

B. PROCEDURE

Thirty-six Springfield College summer students (16 females and 20 males) served as *Ss*. *Ss* were told that they were to form an impression of a person who

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would be described to them by six personality traits. The stimulus traits were said to have been obtained from people who knew the person well. The traits (intelligent, self-centered, pessimistic, sensitive, kind, and competitive) were read slowly to the *Ss* in three different random orders. The *Ss* were asked to think about the traits and form an impression of the person, so that they could write as complete a description of him as possible. They were then given five minutes to write their impressions. These descriptions were later scored by counting the number of concepts used by the *S*. (Physical characteristics were not counted.)

In a second experimental session, *Ss* were asked to determine the relation of each of the six stimulus traits to each of 20 "other" traits. These "other" traits were derived individually for each *S* from descriptions (he had previously provided) of eight acquaintances. For each stimulus trait, *S* indicated on an 11-point scale how closely he thought it was related to each of the 20 "other" traits. The 11-point scales ranged from zero (inversely related) to 100 (directly related). For scoring, scale values from 40 through 60 were considered to indicate "not significantly related to a given other trait." The number of the 20 "other" traits checked by *S* as significantly related to the stimulus trait constituted an index of the extensity of meaning for that trait. The independent variable, the meaning of the entire stimulus-trait set for each *S*, was obtained by summing the preceding indices for the six stimulus traits.

C. RESULTS AND DISCUSSION

The results of the experiment are statistically significant: A median split (*a*) of the total number of concepts used by *Ss* to describe the stimulus person and (*b*) of the independent measure of meaning of the six traits said by the experimenters to describe the stimulus person yields a chi-square of 5.71 ($p < .025$, $df = 1$). The direction of this association indicates that the *S* who predicates more extensive connotations to the six traits describing the stimulus person also says more about the stimulus person in his written impression. This finding confirms our initial hypothesis and provides construct validity for Shapiro and Tagiuri's technique of measuring the meaning of personality traits.

One should realize, however, that this method of measuring meaning is anchored to "defining" operations; consequently variations in the defining operations might yield results different from those we obtained. For example, in defining the meaning of a stimulus trait we used 20 "other" traits. Would 100 "other" traits have given more reliable results? or would such a number have obscured our present findings?

One result of the present study is relevant to the contention that there are sex differences in personality traits. Shapiro and Tagiuri (1) report that females tend to make more extreme inferences to "other" traits than do males. On the other hand, Wallach and Caron (2) argue that the female is conceptually conservative and, unless she is highly certain, makes less extreme inferences than the male. Our findings support neither side in this controversy. Our males do not differ significantly from females in either the number or the extremeness of their inferences to the "other" traits.

D. SUMMARY

The purpose of this study was to provide construct validity for an operational measure of connotative meaning by demonstrating its predictive value in a person-perception task. It was hypothesized and confirmed that Ss who perceive more extensive connotations in a set of stimulus traits describing another person describe this other person in more detail than do Ss perceiving less connotative meaning.

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PAST EXPERIENCE, SELF-EVALUATION, AND PRESENT ADJUSTMENT*¹

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A. INTRODUCTION

In all major personality theories evaluative attitudes toward body and self have been emphasized as important influences in behavior. Psychoanalytically oriented theorists have postulated the vital role of ego-defense mechanisms (2) and "security operations" (8) in maintaining a favorable self-image, and Rogers (6) has placed self-evaluation at the center of his theory of personality development and change. Wylie (9) has recently documented the importance of the self-concept in personality and behavioral research, and Fisher and Cleveland (1) have amassed convincing evidence concerning the significant part that body image plays in personality functioning.

While a bewildering array of measurement techniques and findings have been reported in the research literature on self-evaluation, little progress has been made in the operational definition of concepts and in the empirical test of hypotheses. In one attempt to gain quantitative data concerning attitudes toward self, Secord and Jourard (7) reported a method for the measurement of "body cathexis" and "self-cathexis." Body cathexis was defined as the degree of satisfaction reported by a person with aspects of his own body; self-cathexis referred to satisfaction with abilities and personality. Body cathexis and self-cathexis were found to be substantially related, and body cathexis was related to bodily concern as measured by a word-association technique. Johnson (5) confirmed the relationship between body cathexis and self-cathexis and demonstrated that body cathexis and an anxiety indicator (composed of body items most negatively cathected) were significantly correlated with somatic symptoms as measured by the Cornell Medical Index Health Questionnaire.

Of special interest to personality theorists are the antecedents and the

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behavioral consequences of positive or negative self-evaluations. Information in this area generally has been limited to inferences from therapeutic interviews with neurotic or psychotic patients. In the present study the relationships of a number of biographical and personal characteristics to quantitative self-evaluation measures are investigated in a large sample of nonpsychiatric and presumed normal subjects, and the relationship of self-evaluations to four adjustment criteria are analyzed.

One of the problems in using global scores, such as body cathexis and self-cathexis, which were obtained by summing across many different items, is the questionable assumption that the items within the instrument are equally salient for the concept being measured. It has not been demonstrated that the items of the body-cathexis and self-cathexis scales are homogeneous and internally consistent. The most suitable method for determining the internal structure of such an inventory is factor analysis.

The goals of this study were thus twofold: (a) to examine the relationships of attitudes toward body and self to past experiences and to present adjustment and (b) to investigate the factor structure of the body and self-cathexis scales and to determine whether a more meaningful differentiation of attitudes toward self might be achieved.

B. METHOD

As part of a larger study concerned with adjustment to Navy life, 743 Navy enlisted men assigned to an aircraft carrier were given tests and questionnaires by medical personnel while the ship was at sea. The age range for the sample was 17 to 21, and mean age was 18.9 years. Mean education was 11.1 years, and mean intelligence (General Classification Test) score was 52.2. Length of service averaged 16.8 months. The sample included a wide variety of Navy rates and job assignments typical of an aircraft carrier.

On the basis of a previous study (5), 22 body-cathexis items and 30 self-cathexis items were selected for inclusion in the present study. The questionnaire, called the Self Evaluation Index (SEI), was part of a test booklet that also contained a biographical face sheet of 26 items and an attitude inventory of 135 true-false items. Initially, three scores were obtained from the SEI: Body-Cathexis (BC) Scale, Self-Cathexis (SC) Scale, and Anxiety-Indicator (AI) Scale. Each of the items or characteristics were rated on a five-point scale in terms of the subject's satisfaction or dissatisfaction with that particular aspect of himself. The BC score was the sum of the ratings on the 22 BC items, and the SC score was the sum of the ratings on the

30 SC items. The AI score was the sum of the ratings on 11 BC items most negatively cathected by males in previous studies.

Biographical items and personal data correlated with the self-evaluation scores included the following: age, height, weight, number of months in Navy, school grades completed, school grades failed, trouble with teachers, truancy, residence changes before age 14, importance of religion in home, agreement of parents in religious beliefs, by whom discipline was administered, quality of discipline by father and mother, to whom subject would turn if in trouble, and separation or divorce of parents.

In addition to the SEI, the Inventory of Personal Opinions which consisted of 135 items that had discriminated more effective from less effective Navy personnel in previous studies (3) was also given to each subject. Two scores were derived from this Inventory: one designed to reflect delinquent attitudes (Delinquency Scale) and one designed to reflect immature attitudes toward interpersonal relationships (Maturity Scale).

Criterion data, consisting of semiannual Professional Performance (proficiency) and Military Behavior (conduct) ratings, disciplinary offense records, and medical records were obtained from individual service records and ship's records. Test and criterion data were not available for the entire sample. Losses of criterion information were due to transfers, releases from the service, or insufficient time in service to receive performance marks.² A number of tests were unscorable, and 98 subjects (13 per cent) were eliminated from the sample because of response sets defined as follows: 40 responses in Category 3, 30 responses in Category 4, or 26 responses in Category 5. The rationale for the removal of these cases, of course, was the doubtful validity of tests with such extreme response distributions. The *Ss* eliminated for response set constituted less than the 29 per cent found by Secord and Jourard (7) but more than the eight per cent reported by Johnson (5).

C. RESULTS

The BC and SC Scales were significantly correlated in the present sample ($r = .53$, $p < .001$). This relationship is lower than that found by Johnson (5)— $r = .66$ —for male seminary students, but supports the proposition that attitudes toward various aspects of self are not independent. As found by

² A sample of 110 subjects on whom most or all of the criterion data were missing was compared with the remainder of the total sample for possible sampling biases due to administrative losses. Means differed significantly for only one of the 28 variables tested (Mother's Education) indicating that no sampling bias was present due to losses of criterion data.

Secord and Jourard (7) and Johnson (5), most dissatisfaction was attributed to items concerned with body build and physical strength.

The data were next examined for relationships between the BC and SC scores and other variables of the study. As score on the Anxiety Indicator Scale correlated .92 with score on the BC Scale, the former variable was dropped from further consideration. For both BC and SC Scales, correlations with age, intelligence, and body size (height and weight) were negligible as were correlations between the BC Scale and single biographical items. Significant relationships were present, however, between the SC Scale and five of the biographical items: truancy, $r = -.12$; father's discipline (hard to predict), $r = -.13$; mother's discipline (hard to predict), $r = -.10$; six or more residence changes, $r = -.10$; and parents' religion (differed greatly), $r = -.15$. These results provide some evidence that certain past experiences are associated with the self-evaluations of these young men.

Biographical items which in an earlier study had proven discriminating with respect to the disciplinary-offense criterion (4) were grouped into three clusters reflecting (a) instability and conflict in the home, (b) inappropriate or extreme disciplinary practices by parents, and (c) persistent difficulties in school adjustment. Correlations of these cluster scores separately and when combined into a Biographic Index with the BC and SC Scales are shown in Table 1. Poor school adjustment was found to be related to negative attitudes toward both body and self, but parental discipline and family conflict correlate significantly only with self-cathexis. The Biographic Index is significantly correlated with both scales.

The relationships of the BC and SC Scales to the attitude-inventory measures are significant and in the expected direction. These results are also

TABLE 1
RELATIONSHIPS OF BODY-CATHEXIS SCORES AND SELF-CATHEXIS SCORES
TO BIOGRAPHICAL CHARACTERISTICS AND ATTITUDE MEASURES

Variable	Correlations ^a	
	Body-cathexis	Self-cathexis
<i>Biographical Characteristics</i>		
School adjustment	-.18 ^b	-.17 ^b
Parental Discipline	-.05	-.09 ^b
Family Conflict	-.08	-.15 ^b
Biographic Index	-.17 ^b	-.22 ^b
<i>Attitude Measures</i>		
Maturity Scale	.20 ^b	.34 ^b
Delinquency Scale	-.20 ^b	-.34 ^b

^a All coefficients are Pearson product-moment correlations; decimal points are omitted. All N 's exceed 578.

^b Significant beyond the .05 level of confidence.

presented in Table 1. BC and SC scores are positively correlated with the Maturity Scale, while subjects with low self-evaluation scores are high on the Delinquency Scale.

None of the correlations of the BC and SC Scales with the criterion measures of proficiency or military conduct is significant, indicating that for this nonpsychiatric sample feelings about self are not associated with these indicators of military performance.

The principal-components factor-analytic method was employed to reduce the SEI to its constituent dimensions. Ten factors, accounting for 83 per cent of the variance, were extracted and rotated by Kaiser's varimax procedure. Eight of the factors were judged to be psychologically interpretable and were retained for further study.

Item content and rotated factor loadings for each of the eight factors are presented in Table 2. For each factor the 10 items with highest loadings are listed, and items included in the new factor-derived self-evaluation scales are indicated. As the magnitude of factor loadings and item intercorrelations were homogeneous within each factor, summing of ratings across items (giving them equal unit weight) seemed justified. Intercorrelations among the new factor-derived self-evaluation scales and correlations with the original BC and SC Scales are shown in Table 3.

Of primary interest in Table 3 is the degree of independence achieved among the several factor-derived scales. Three of the factors obtained (Physical Strength, Body Build, and Profile) are composed entirely of body-cathexis items, while the other five factors are drawn from self-cathexis items. Differentiation of the Self Evaluation Index into factors tends to reduce the interdependence of the body-cathexis and self-cathexis components since none of the factors derived from the body-cathexis items correlates above .25 with factors derived from the self-cathexis items. The Profile Factor (concern with facial appearance) emerged as an independent aspect of body cathexis, while the Physical Strength and Body Build Factors were highly interrelated and accounted for a large proportion of the variance of the body-cathexis items. The Work Attitude Factor emerged as a relatively distinct aspect of self-cathexis.

Relationships of the eight factor-derived scales to personal data, biographical characteristics, and attitude measures are shown in Table 4. Each of the factor scales has a pattern of relationships different from that of the other variables.

Age, education, and GCT correlate significantly with a number of the scales, although not always in the same direction. Height and weight have

TABLE 2
SELF-EVALUATION FACTORS AND ROTATED-FACTOR LOADINGS^a

Rotated-factor loading	Item	Rotated-factor loading	Item	Rotated-factor loading	Item
<i>Factor I—Physical Strength</i>					
-.813 ^b	Chest	-.530 ^b	Waist	-.583 ^b	Face
-.778 ^b	Width of shoulders	-.493 ^b	Hips	-.539 ^b	Shape of head
-.691 ^b	Muscles	-.432 ^b	Weight	-.536 ^b	Nose
-.666 ^b	Body build	-.312 ^b	Body build	-.515 ^b	Facial complexion
-.378	Profile	-.219	Penis	-.288	Distribution of hair over body
-.365	Weight	-.200	Back	-.285	Ears
-.299	Energy level	-.197	Energy level	-.264	Profile
-.269	Athletic skills	-.165	Height	-.218	Personality
-.282	Hips	-.155	Profile	-.198	Teeth
-.213	Height	-.154	Muscles	-.192	Hips
<i>Factor II—Body Build</i>					
<i>Factor III—Profile</i>					
<i>Factor IV—Will Power</i>					
				.579 ^b	Will power
				.526 ^b	Self-discipline
				.518 ^b	Ability to make decisions
				.477 ^b	Self-assertiveness
				.441 ^b	Self-confidence
				.385	Self-respect
				.332	Athletic skills
				.325	Capacity for work
				.282	Conscientiousness
				.275	Self-consciousness
<i>Factor V—Intelligence</i>					
.688 ^b	Intelligence level	.605 ^b	Ability to take orders	.488 ^b	Moods
.653 ^b	General knowledge	.539 ^b	Sense of duty	.456 ^b	Ability to accept criticism
.335 ^b	Ability to concentrate	.523 ^b	Capacity for work	.445 ^b	Self-consciousness
.478 ^b	Ability to express self	.354	Self-respect	.377 ^b	Emotional control
.369 ^b	Life goals	.346	Tolerance	.355 ^b	Self-understanding
.330	Memory	.321	Happiness	.355 ^b	Tolerance
.301	Self-understanding	.298	Ability to accept criticism	.344 ^b	Fears
.271	Creativeness	.288	Conscientiousness	.315	Ability to express sympathy
.223	Self-confidence	.284	Self-understanding	.300	Self-confidence
.210	Conscientiousness	.245	Energy level	.243	Ability to take orders
<i>Factor VI—Work Attitude</i>					
<i>Factor VII—Emotional Control</i>					
<i>Factor VIII—Social</i>					
				-.559 ^b	Personality
				-.559 ^b	Popularity
				-.437 ^b	Ability to meet people
				-.346 ^b	Ability to express sympathy
				-.342 ^b	Ability to express self
				-.318	Memory
				-.318	Self-assertiveness
				-.299	Athletic skills
				-.289	Ability to make decisions
				-.258	Self-confidence

^a The numerical order given the eight factors is unrelated to the order in which they were extracted.^b Items included in new factor-derived scales.

TABLE 3
INTERCORRELATIONS AMONG SELF-EVALUATION FACTORS^a

Factor or Scale	Factor						
	Body Build	Profile	Will Power	Intelli- gence	Attitude	Emotional Control	Social
Physical Strength	66	26	25	21	22	22	24
Body Build		24	23	18	18	24	21
Profile			23	15	23	22	25
Will Power				46	36	55	54
Intelligence					25	40	60
Work Attitude						45	27
Emotional Control							49
Social							38
Body-Cathexis Scale							41
							77
							53

^a Pearson product-moment correlations, decimal points omitted; $N = 518$; all values in the table are significant ($p < .05$).

TABLE 4
RELATIONSHIPS OF SELF-EVALUATION FACTOR SCORES TO PERSONAL DATA, BIOGRAPHICAL
CHARACTERISTICS, AND ATTITUDE MEASURES^a

Item	Physical Strength	Body Build	Profile	Will Power	Intelligence	Work Attitude	Emotional Control	Social
<i>Personal Data</i>								
Age	13 ^b	07	07	14 ^b	09 ^b	16 ^b	10 ^b	13 ^b
Intelligence (GCT)	—02	—09 ^b	—14 ^b	—22 ^b	17 ^b	00	—09 ^b	—13 ^b
Education	02	—08	04	—01	16 ^b	12 ^b	—01	06
Height	05	04	03	07	07	09 ^b	06	05
Weight	11 ^b	03	04	04	05	09 ^b	05	04
<i>Biographical Characteristics</i>								
School Adjustment	—14 ^b	—09 ^b	—12 ^b	—10 ^b	—10 ^b	—17 ^b	—14 ^b	—13 ^b
Parental Discipline	01	00	—08	—01	—02	—04	—11 ^b	—06
Family Conflict	—02	02	—08	—08	—11 ^b	—11 ^b	—12 ^b	—13 ^b
Biographic Index	—09 ^b	—05	—15 ^b	—10 ^b	—12 ^b	—17 ^b	—19 ^b	—17 ^b
<i>Attitude Measures</i>								
Maturity Scale	17 ^b	08	13 ^b	21 ^b	27 ^b	36 ^b	28 ^b	24 ^b
Delinquency Scale	—16 ^b	—09 ^b	—14 ^b	—21 ^b	—20 ^b	—39 ^b	—33 ^b	—19 ^b

^a All coefficients are Pearson product-moment correlations; decimals are omitted. All *N*'s exceed 480.

^b Significant beyond the .05 level of confidence.

negligible relationships with the factor scores. The school-adjustment biographical cluster correlates significantly with all eight of the factor-derived scales, while the Discipline cluster correlates only with the Emotional Control Scale. The family-conflict cluster correlates significantly with the Social, Emotional Control, Work Attitude, and Intelligence Scales. The Biographic Index correlates with all factor scales except Body Build and is most highly correlated with the Emotional Control ($-.19$), Work Attitude ($-.18$), and Social ($-.17$) Scales.

Correlations of the factor scales with the criteria were negligible with the exception of the Work Attitude Scale which correlated significantly with both the disciplinary offense and conduct rating criteria.

D. DISCUSSION

In this study primary attention was given to possible relationships between self-evaluation measures and antecedent life experiences as reported by the subject on the one hand and current life-adjustment indicators on the other. The SC Scale was related significantly to several biographical characteristics taken singly and to an index or score derived from nine biographical items which reflected lax or erratic discipline by father, discipline not administered primarily by father, separation or divorce of parents, not turning to parents when in trouble, and persistent difficulties in school adjustment. Of particular interest was the consistent relationship of school adjustment to both of the cathexis scales as well as to all of the factor-derived scales. The reasons for this result are obviously complex but probably involve the relationship of self-image to acceptance by both teachers and peers as well as to classroom performance. The fact that these scales were not related to military adjustment may be due to the fact that the *Ss* are in a new environment, the Navy, which has at least temporarily provided many with a more positive role and self-concept. It is entirely possible that many adolescents regard military life as psychologically more rewarding or perhaps less demanding and frustrating than high school. The large number of young men who volunteer for the Navy before finishing high school lends plausibility to this hypothesis.

The correlations, though uniformly low, do point to specific areas of early life experience that may engender lasting inadequacy feelings or chronic dissatisfaction. The fact that these were questionnaire reports from presumed psychiatrically healthy subjects probably accounts for the low order of relationships found. It seems reasonable to assume that the correlations would be higher in a sample of subjects selected on the basis of adjustment problems and examined more intensively.

From the results it is apparent that no simple, linear relationships were present between BC or SC scores and the criterion measures of this study. After factor analysis, only the Work Attitude aspect of self-cathexis proved to have any significant relationship to our adjustment criteria. This finding appears reasonable in the light of the type of subjects studied. In this non-psychiatric sample, work attitudes should be more relevant to performance on the job than other aspects of self evaluation. A sailor's ability to take orders, his sense of duty, and his capacity for work are all significant factors in the ratings given him by superiors.

Some evidence for construct validity of the self-evaluation measures is provided by their correlations with the Maturity and Delinquency Scales. The Maturity Scale was constructed from items that were highly discriminating with respect to an interview-based criterion of interpersonal maturity for confined naval personnel. The Delinquency Scale was composed of items that had demonstrated predictive validity for Navy adjustment. The moderate correlations between positive self-regard and these empirically derived personality inventories are about what should be expected within a limited (normal) range of adjustment.

E. SUMMARY

1. Self-evaluation measures in a population of young, healthy Navy men correlated significantly with a composite of biographical information reflecting family instability and conflict, inconsistent or extreme disciplinary practices by parents, and persistent difficulties in school adjustment.

2. Factor analysis of the self-evaluation inventory yielded eight factors that provided a more meaningful differentiation of attitudes toward self than the global measures of body cathexis and self-cathexis used previously.

3. The self-evaluation measures correlated in the expected direction with attitude measures of interpersonal maturity and delinquency proneness—positive self-regard being positively related to the Maturity Scale and negatively correlated with the Delinquency Scale.

4. With the exception of one factor-derived scale, Work Attitude, the self-evaluation measures did not correlate significantly with any of four military-adjustment criteria. It was inferred that the relationships of these self-evaluation measures to adjustment probably are of low order in a normal population or are not simple linear ones.

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SOURCE CERTAINTY AS A VARIABLE IN CONFORMITY BEHAVIOR*

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A. INTRODUCTION

Since Sherif's (5) and Asch's (1) pioneering demonstrations that social influence of judgment behavior is possible under relatively controlled laboratory conditions, a great deal of research has been devoted to isolating the many variables associated with the phenomenon of "conformity." One trend of work in this area has been to examine the characteristics and behavior of the source of information to which the subject is exposed: that is, the other person or persons, natural or "planted," with whom the person to be influenced is in interaction. A number of consistent findings, summarized recently by Blake and Mouton (2) and by Campbell (3), have been produced by these investigations.

Several studies indicate that one variable related to conformity is the degree of confidence of the source which is perceived by the subject. For example, Thorndike (6) found that the group decision shifts slightly toward the responses of those sources who show the greatest confidence in their response—be it correct or incorrect. Tuddenham and McBride's results (7) indicate that yielding subjects in a Crutchfield-type experimental setting felt the source to be better informed and more confident than themselves. In addition, females were found to overestimate source ability more than males.

None of the published studies has manipulated directly source confidence or certainty; therefore the purpose of the present investigation is to examine the effects of the degree of source certainty, as manifested in the verbal behavior of the source in a Sherif-type laboratory conformity situation.

Typically, no mention is made in the conformity-experiment reports of the verbal behavior of the information source: that is, the type of response made by the source in communicating to the subject. Most investigators have been content to say, for example, that "the group was instructed to be friendly but firm" or that the confederate pronounced his judgments "in a firm, decisive tone" (1, pp. 454, 476) if they mentioned the verbal activity of the information source at all.

* Received in the Editorial Office, Provincetown, Massachusetts, on February 10, 1964. Copyright, 1965, by The Journal Press.

In the present study, source certainty was behaviorally defined in two independent ways in terms of the degree of assurance and the latency of verbalization of the source. While no formal hypotheses were proposed, we expected that the high-certainty conditions of immediate-source response and high-source assurance would effect greater changes in the experimental subjects' judgment-reporting behavior than would the low-certainty conditions of delayed-source response and low-source assurance, and that females would be influenced to a greater extent than males.

B. METHOD

1. Apparatus

The experimental situation employed an autokinetic light source and the judgmental procedure previously used by Vidulich and Kaiman (8), in which *S* reports the *direction* of perceived autokinetic movement.

The stimulus-light box was mounted on a table 32 inches above the floor at one end of a lightproof and relatively soundproof room. A point of light was exposed through a hole one millimeter in diameter in one end of a lightproof wooden box, nine inches long, three inches wide, and three inches high, painted flat black inside and out. The light source was a small radio bulb at the far end of the box. The bulb was connected to a transformer to receive a constant electrical input of 2.5 volts. Two thicknesses of tissue paper diffused the light. Exposure time was automatically controlled by two Hunter timers, so that the light was activated and shut off for 10-second intervals. This alternating sequence was repeated for the total experimental period.

One *S* at a time, the experimenter (*E*), and a confederate (*C*) of *E* were seated at the end of the experimental room opposite from the light source, *S* being 197 inches (five meters) from the light aperture. The experimental room was in complete darkness at all times.

2. Subjects

Thirty male and 30 female undergraduate students at Louisiana State University served as experimental *Ss*. All were between the ages of 18 and 22 years and all but seven were sophomores. The *Ss* volunteered for an "experiment on perception." None had previous knowledge about the autokinetic phenomenon. Equal members of each sex were used to isolate the possible effects of sex upon behavior in the autokinetic situation under the major-variable conditions.

3. Procedure

The 60 *Ss* were randomly divided into six groups with five males and five females in each group. There were four experimental groups (A, B, C, and

D) and two control groups (E and F). Group A consisted of 10 *Ss* who received immediate responses with high assurance from *C*; Group B *Ss* received immediate responses with low assurance from *C*; Group C *Ss* received delayed responses with high assurance; Group D *Ss* received delayed responses with low assurance; *Ss* in Control Group E recorded their responses privately during both phases of the experiment in the presence of *C* but without *C* responding; *Ss* in Control Group F recorded their responses privately in both phases but without *C* present in the experimental room.

An immediate response by *C* was made immediately after the light went off. In making a delayed response, *C* counted three seconds to himself before responding. A low-assurance response by *C* was begun with or was followed by "I think," "Maybe to the left," "I guess," "Unhh, to the right," and similar phrases expressing doubt. High assurance was expressed when *C* responded firmly and without qualification: e.g., "Moved right!" "Definitely to the left!"

During the first phase of the experiment, *S* observed 30 exposures of the light, judged the direction (either left or right) of the "movement" of the light, and privately recorded his judgments on one or another of two 3" × 5" pads. During the second experimental phase, *S* observed 30 additional exposures of the light, made his responses orally, and *E* recorded them. The *C* reported his "judgments" prior to those of *S* during the second phase.

Eighty per cent of *C*'s responses during the second phase were randomly given in the direction least frequently reported by *S* during the first phase. *E*, upon determining *S*'s predominant directional choice in the first phase, informed *C* of the response pattern to be reported by tapping him on the right or left shoulder. *C* used a string of beads and knots to determine the direction of each response to be given. The three *Ss* who gave exactly 15 right and 15 left responses in the first phase were randomly given either a right-predominant or a left-predominant directional response pattern.

The meeting of *S* and *C* took place outside the experimental room. They were introduced by first names only. *C* was presented as "Bob, who is also a student here at L.S.U. Both of you will be observing the same thing and I am interested in your reactions." *C* and *S* were then shown to their seats in the completely darkened experimental room by *E*, who used a small penlight. *C* was presented to *S* as equal in status to control for the differential influence a person of high or low status has upon conformity behavior (8). The same *C* was used for all subjects.

Task instructions were given as follows:

When I give the signal "Ready" a light will go on. After a short time, the light will start to move. Then the light will go off. When the light

goes off you are to mark the direction of the light's movement on one of the two pads directly in front of you. There is a pencil between the two pads. If the light moved to the left, make a mark on the left pad; if the light moved to the right, make a mark on the right pad. Sometimes the light will move a great distance, at other times it will move only slightly. Be sure you make a mark for each trial, and *only one* mark to indicate the direction in which the light moved on each trial. When I give the signal there will be *no* talking. Ready.

The 30 trials of the first phase were then given. After the 30th exposure, *E* said:

Please give me your pads. In order to speed this up a little bit, the next time the light goes on, I want you to tell me which way the light moved, and I'll record your answers myself. You can tell me your answers after the light goes off. I'll flip a coin to see who will go first.

The *C* always went first in the second phase of the experiment. At the termination of the second phase, *E* escorted both *S* and *C* out of the experimental room and seated them in two separate rooms "to fill out a post-experimental questionnaire." This consisted of one critical item ("How certain did your partner appear to you about his judgments of the directions in which the light moved?") and four noncritical, buffer items.

C. RESULTS

The first response measure defining conformity, a "difference" score, was calculated by subtracting the number of *S*'s less-dominant directional responses during the first phase from the number of the same-direction responses made during the second phase. The second response measure, an "agreement" score, was calculated by tabulating the number of *S*'s responses that agreed with those of *C* during the second phase. For both measures, the higher the score the greater the presumed conformity of *S* to *C*'s responses.

Both difference and agreement scores were analyzed using two-by-two-by-two analyses of variance, the variables being latency of response, degree of assurance, and sex. Mean differences between treatment conditions were further analyzed with two-tailed *t* tests.

1. *Difference Scores*

Table 1 shows that the two conditions of source assurance are significantly related to the amount of shift in directional judgments from the first to the second phase of the experiment. The greater shift in judgments occurred when the source displayed high assurance. The mean shift for the high-assurance

TABLE 1
ANALYSES OF VARIANCE

Source	df	Difference scores		Agreement scores	
		MS	F	MS	F
Assurance	1	216.225	17.419*	70.225	6.326**
Latency	1	4.225		9.025	
Sex	1	42.025	3.386	.025	
Interaction					
Assurance-by-latency	1	.025		.025	
Assurance-by-sex	1	.225		3.025	
Latency-by-sex	1	2.025		24.025	2.164
Assurance-by-latency-by-sex	1	65.025	5.238**	.225	
Within	32	12.413		11.100	
Total	39				

* Significant beyond the .01 level.

** Significant beyond the .05 level.

conditions was 5.10 responses, while that for the low-assurance conditions was .45 of one response ($p < .01$).

Neither latency of response nor sex is significantly related to the size of the difference scores. Of the interactions, only the triple interaction between latency, assurance, and sex is significant beyond the .05 level.

Analyses, using t tests, of the mean difference scores of the eight treatment groups indicates that under the immediate response high-assurance condition females shift significantly more toward *C* than males (mean for females, 7.40; for males, 2.20). The males shift away from *C* in the delayed-response low-assurance condition (mean = -1.20), while the females under this condition show a slight shift toward *C* (mean = 2.80). Both comparisons are significant beyond the .01 level. Generally, the greatest shift occurs in the delayed-response high-assurance condition, the mean difference scores being 5.80 and 5.00 for males and females respectively; also, the smallest amount of change occurs in the immediate-response low-assurance condition, with mean difference scores of .20 for males and .00 for females. These sex differences were not significant.

2. Agreement Scores

The main independent variable of degree of assurance proves significant for agreement scores, although to a lesser extent than for difference scores ($p < .05$).

High-assurance conditions (16.50 agreements) produce significantly more agreement with the source than do low-assurance conditions (13.85 agreements). As in the previous analysis, the independent variables of latency and sex are nonsignificantly related to amount of conformity. None of the inter-

actions between the three independent variables reaches an acceptable level of significance.

3. *Control Groups*

The mean differences between the two control groups, and between each appropriate pair of treatment conditions (high and low assurance and immediate and delayed response) and the combined control conditions were analyzed by *t* tests. These comparisons were possible only for the difference scores. Practically no difference was noted between the two control groups, the mean difference scores being .40 and .60 for Control Group I and Control Group II respectively. The mean difference score of the high-assurance condition (5.10) differed from that of the combined control group (mean = .50) at the .01 level of confidence. The experimental condition of immediate response (mean difference score = 2.45) as well as that of delayed response (mean difference score = 3.10) differs significantly from the combined controls beyond the .05 level. The low-assurance group (mean difference score = .45) and the combined controls do not differ significantly from one another.

4. *Questionnaire Analysis*

The findings obtained from an analysis of responses to the postexperimental-questionnaire item regarding *S*'s appraisal of *C*'s certainty of judgment buttress the results obtained on the assurance variable. On a four-point scale of certainty (with one equalling "completely certain"; two, "fairly certain"; three, "fairly uncertain"; and four, "completely uncertain"), the average score for the high-assurance conditions was 2.10, while that for the low-assurance conditions was 3.00. This difference is significant beyond the .01 level ($F = 30.00$). Almost identical mean scores were obtained on this item for the two latency conditions (immediate response = 2.50; delayed response = 2.60), and the *F* test of the difference between these means was found to be nonsignificant, as was the assurance-by-latency interaction.

D. DISCUSSION

Our results support the contention that conformity behavior in the autokinetic situation is partially a function of the expressed certainty of the information source to which the subject is exposed. Greater influence is noted when the source expresses certainty in his communications than when he expresses doubt. Source-response latency, at least in the temporal duration used in this study (three seconds), did not significantly affect the behavior of the respondents. Two interpretations of this latter finding are possible:

the response-immediacy and latency conditions were not sufficiently different to produce significantly different effects or latency of source response is not a major variable in conformity behavior. Further studies employing a wider range of latencies are needed.

A tendency was noted for females to show greater susceptibility than males to influence pressures. This nonsignificant trend is consistent with previous findings implying decreased resistance of females to social pressures in situations of this type, especially when confronted with male information sources (4). Only two significant sex differences were obtained: (a) females were more susceptible than males to influence when the messages of the source were communicated immediately with high assurance and (b) males shifted away from the source, while females conformed slightly when the source delayed his response and also expressed little confidence in his "judgment." The former finding suggests that increased female-conformity behavior is heightened by exposure to highly confident sources who show little latency. The reasons for this and for the male's rejection of source communications in the delayed low-confidence treatment are unclear and must be isolated in further investigations.

To our knowledge, this study is one of very few that have used controls in laboratory investigations of influence and conformity. For this reason, the findings seem to be of increased importance. Influence effects were noted for all experimental treatments except low assurance, when compared with the control conditions of a nonresponding "other" in the situation and the complete absence of a source.

The controls did not differ from each other. Even a delayed communication by the source significantly affected the subjects' judgmental activity, although this delayed-response condition was not significantly different from immediately given source communications. These findings suggest that a source responding in practically any fashion (except indicating lack of confidence in his own "judgments") will produce increased shifting of behavior in this experimental situation.

The major finding leads us to recommend that the variable of expressed source confidence be taken into account in future laboratory investigations of conformity behavior.

E. SUMMARY

This study tested the prediction that increased source certainty leads to increased influence effectiveness in a traditionally used conformity situation. Source certainty was defined in terms of the immediacy of response and the degree of expressed assurance.

Groups of task-naïve college-student Ss were placed individually in an autokinetic situation with an equal-status confederate, who for each treatment group responded in one of the following ways: high-assurance immediate response; high-assurance delayed (three-second) response; low-assurance immediate response; low-assurance delayed response. Each experimental S privately judged the directional movement of the light for 30 exposures during the first experimental period. During the second phase of the experiment, the confederate made responses that were 80 per cent in the less-judged direction by S during the private-judging phase. Two control conditions, using different Ss, in which S responded privately in the presence of a nonresponding confederate and in which no confederate was present, also were used.

Data analyses for two response measures of conformity indicate that the amount of expressed source confidence *is*, and the degree of source-message latency is not, related to amount of shift in judgmental activity. Sex differences and deviations of the experimental treatments from the control conditions were discussed.

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ATTITUDES TOWARD DEAFNESS AS A FUNCTION OF INCREASING MATURITY*

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A. INTRODUCTION

Previous research (2, 3), has been done to investigate how the handicap of deafness is evaluated and interpreted by American culture. American culture, however, is not univocal and differences in attitude can be expected along many different dimensions. One of the most obvious dimensions that might be expected to correlate highly with increasing age or maturity is that of increasing knowledge, or of increasing sensitivity.

B. METHOD

One hundred *Ss* (five groups of 20 each) formed the respondents. The groups were sixth-grade students, high-school students, college students, graduate students, and members of a PTA group. Each *S* was presented with 97 statements that had been obtained by a questionnaire in a previous study. These statements reflected common attitudes and ideas within four major categories: (a) treatment of the deaf, (b) training of the deaf, (c) personal characteristics of the deaf, and (d) achievement characteristics of the deaf. The *Ss* were instructed to indicate their reactions to each item by placing a check mark anywhere along a 90-millimeter line (1). One end of the line was labeled "disagree completely." The other end of the line was labeled "agree completely."

Each statement was evaluated by the three *Es* in terms of whether it represented a realistic or unrealistic attitude or point of view, so that the *S's* responses could be interpreted accordingly. The score for each *S* on each item was determined by measuring the point in millimeters along the 90-millimeter line on which the check mark was placed.

C. RESULTS

The data analyzed for this article are the ratings of 88 of the 97 items¹ given to each *S*. These 88 items are distributed as follows:

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¹ Nine of the 97 items deal with general information and do not fit into the categories listed. Data for these nine items are not included in the analysis.

I. Treatment	14 items
II. Training	15 items
III. Personal Characteristics	27 items
IV. Achievement Characteristics	32 items

1. Analysis of Variance

The main statistical treatment is an analysis of variance in which each of the four categories is treated as a unit. Each category includes the ratings of five groups of 20 Ss on the items within the category. Earlier data showed differences among Ss that were clear and expected; hence they do not form an integral part of our present analysis. Similarly, category differences are not analyzed. In other words, items within a category were chosen specifically for that category. Each category is an independent unit and the four categories do not form a logical continuum along which differences may be tested for significance.

TABLE 1
ANALYSIS OF VARIANCE FOR EACH OF THE FOUR CATEGORIES

Source	df	Variance	F	p
<i>Treatment</i>				
Groups	4	33,650.2	1.06	
Items	13	474,175.5	14.92	< .001
Groups-by-items	52	31,779.0		
Total	69			
<i>Training</i>				
Groups	4	23,509.2	1.63	
Items	14	738,402.4	51.3	< .001
Groups-by-items	56	14,400.9		
Total	74			
<i>Personal Characteristics</i>				
Groups	4	146,049.2	5.45	< .001
Items	26	339,623.2	12.67	< .001
Groups-by-items	104	26,796.5		
Total	134			
<i>Achievement Characteristics</i>				
Groups	4	157,733.3	10.49	< .001
Items	31	823,109.4	54.73	< .001
Groups-by-items	124	15,040.2		
Total	159			

The five groups do form a continuum, in general, of increasing age and education and, with some justification, it could be said, also, of increasing maturity and sophistication. Nevertheless, group means and item means within categories form our main research interest.² Results of the four analyses are given in Table 1.

² Individual data are not lost because the 20 Ss within each group serve to make the group means and the item means more reliable.

The variable "Items" is significant in each of the four categories. In each category, the F ratio is significant beyond the .001 level of confidence. An interpretation of these results in terms of the reality orientation of the ratings is given below. The variable "Groups" is significant (beyond the .001 level) only for the categories "Personal Characteristics" and "Achievement Characteristics." Thus, despite the fact that items elicit significantly different degrees of agreement in every category, the five groups show no statistical difference in their attitudes toward and ideas about *treatment* or *training* of the deaf, but do show significant differences in their attitudes toward and ideas about personal characteristics and achievement characteristics of the deaf.

2. Group Means

The means of the groups for the two categories in which group differences are significant are given in Table 2. The originally postulated continuum of age and education (and of maturity and sophistication) contains some inversions; however they are not significant. In general, hypothecation of the continuum seems justified; i.e., the higher the score the more realistic are the ratings.

TABLE 2
MEAN RATINGS FOR PERSONAL CHARACTERISTICS AND ACHIEVEMENT CHARACTERISTICS

Group	Mean rating	
	Personal characteristics	Achievement characteristics
Sixth-grade students	57.4	59.4
High-school students	60.3	62.0
Graduate students	62.0	65.3
PTA parents	65.0	66.8
College students	66.6	68.0

For Personal Characteristics there are three significant differences. Sixth-grade students differ significantly from college students ($p = .02$) and from PTA parents ($p = .03$). High-school students differ significantly from college students ($p = .05$).

For Achievement Characteristics there are five significant differences. Sixth-grade students differ significantly from graduate students and from college students ($p < .01$) and from PTA parents ($p < .05$). High-school students differ significantly from graduate students ($p = .01$) and college students ($p < .05$). No other differences between groups are statistically significant.

3. Item Means

The means of the items for all groups combined show great variability. It is noteworthy, however, that the range for treatment (53) and personal

characteristics (52) is less than those for training (65) and achievement characteristics (67). This indicates, perhaps, greater ambivalence among the Ss in their ratings of the items in the latter two categories.

Clearly, divisions of the rating scale are arbitrary, but the one given in Table 3 is easily rationalized. Table 3 shows that 27 items out of 88 are rated unrealistic (U) or neutral (N), 37 are rated somewhat realistic (SR) and 24 (a little more than one fourth of all items) are rated realistic (R). The nine items that were rated unrealistic are as follows:

TABLE 3
CLASSIFICATION OF THE MEAN RATINGS OF THE SCALES INTO UNREALISTIC (U),
NEUTRAL (N), SOMEWHAT REALISTIC (SR), AND REALISTIC (R) CATEGORIES

Mean rating	Category	Treatment	Training	Personal characteristics	Achievement	Total
0-35	U	1	3	1	4	9
36-55	N	3	1	9	5	18
56-75	SR	5	9	13	10	37
76-90	R	5	2	4	13	24
Total		14	15	27	32	88

a. Treatment. "A person with normal hearing should be careful not to let a deaf person become too dependent upon him."

b. Training. "Deaf people should not use sign language because it isolates them from the hearing world." "With special training deaf people can learn to speak normally." "With the use of lipreading deaf people can understand other people's speech perfectly well."

c. Personal Characteristics. "Deaf people's need to be liked and accepted is greater than that of other people."

d. Achievement Characteristics. "A deaf person could become a musician." "If they are properly taught, deaf children can learn to read and write as fast as other children can." "Deaf people can read and write as well as anyone else." "A deaf person can do almost anything if he puts his mind to it."

D. DISCUSSION

How may our results be interpreted? First, the group differences that appear in these data support the assumption that a dimension that may be named maturity exists in American culture and that significant differences of attitude toward the deaf and of information about the deaf exist along this dimension. It seems reasonable that such differences should exist only for

the two categories Personal Characteristics and Achievement Characteristics and should not for Training and Treatment. It is about the first two categories that information is most differentiated by maturity (and education). In general, greater agreement exists with respect to the manner in which the deaf should be treated and trained.

In general, a response in the unrealistic range (0-35) may indicate lack of familiarity with the problem, an exaggerated need to accept the handicapped, or an unwillingness to appear prejudiced (causing *S* to "lean over backward" to accept the disability).

A response in the neutral range (36-55) sometimes appears to reflect an unwillingness to generalize because of lack of knowledge or genuine indecision due to ambivalence. In other cases, however, it is clear that neutrality means an unrealistic response; for example: (a) "A deaf person could become a doctor," and (b) "A deaf person could become President of the U. S." In many cases the neutral range of responses is neutral only in terms of scale position.

When so considered, it is noteworthy that the items in three categories (Training, Treatment, and Achievement Characteristics) should have a roughly equal percentage of responses in the unrealistic and neutral range (28-29 per cent), whereas the category Personal Characteristics produced 37 per cent of responses in the unrealistic and neutral range. These differences are suggestive (even though not statistically significant) and do seem to indicate less awareness of, and reality orientation toward, personal characteristics of the deaf.

E. SUMMARY

Eighty-eight of 97 statements that had been obtained in a previous study and that reflected common attitudes and ideas in four categories toward the deaf were rated by five groups of 20 *Ss*. These were sixth-grade students, high-school students, college students, graduate students, and members of a PTA group. These groups represented, in general, a continuum of increasing maturity and education. Each *S* indicated the degree to which he agreed with the statement on a 90-millimeter rating scale. Each statement was evaluated by the *Es* with respect to how realistic the reflected attitude was, hence, degree of agreement could be labeled unrealistic, neutral, somewhat realistic, or realistic.

Ratings of items within all categories showed great variability and statistical significance. There was no statistical difference among the five groups in their attitudes toward and ideas about *treatment* of the deaf and *training* of the deaf. Statistically significant differences among the groups were found

for the two categories Personal Characteristics and Achievement Characteristics. There was some confusion and lack of reality orientation in all groups. The data confirm the idea, however, that the five groups form a continuum, in general, of increasing maturity and sophistication in attitudes toward the deaf.

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FACULTY ACADEMIC-ROLE EXPECTATIONS*

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A. INTRODUCTION

According to role theory, each individual occupies a number of roles. Role expectations that individuals hold for themselves or that other members define for them are related to an actor's position in a given social system. The location of an occupant's position in the social system affects the nature of his social relationships as well as the role expectations he and others apply to his behavior. Role expectations may emanate from the broader society, reference-group members, or from an actor's self-perception of the situation. In brief, human social behavior is perceived as a function of the positions an individual occupies, and the role expectations held for incumbents of these positions as he perceives them.

The assumption of consensus on role expectations permeates much of social-science literature. That participants in a social system do agree among themselves on role expectations inheres in the definition of terms. Consensus on role expectations is deemed essential for the functioning of social systems as well as for the actor's behavior.

This study was undertaken to determine whether differences in university faculty *teaching functions* and differences in *Academic Disciplines* are associated with differences in academic-role expectations.

B. METHODOLOGY

Our sample consisted of 156 full-time teaching members representing five academic areas (education, social sciences, physical sciences, humanities-arts, and the applied sciences) and four teacher ranks (professor, associate professor, assistant professor, and instructor). All members of the sample were teaching courses during the Spring term of 1961 and the Fall term of 1962. Stratified random-sampling procedures were employed in the selection of the teaching faculty.

For analysis, faculty respondents were divided as follows: (a) full-time residence or on-campus teachers; (b) teachers whose instructional duties were

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TABLE 1
 ROLE-EXPECTATION ITEMS ON WHICH NO SIGNIFICANT DIFFERENCES IN FACULTY
 RESPONSES WERE UNCOVERED—EITHER BY TEACHING FUNCTIONS
 OR BY ACADEMIC DISCIPLINES

Item No.	Statement of expectation	Faculty response
1	The manipulation of concepts and abstractions <i>should be</i> stressed in contrast to rote memorization of facts.	Yes
5	Instructors <i>should</i> apply differential standards of evaluation to students in a given course because students differ in mental ability.	No
6	Graduating students <i>should be</i> leaving college essentially with the same attitudes and beliefs that they held as freshmen.	No
7	The discovery of knowledge (research activities) <i>should be</i> the primary interest of instructors.	No
9	The instructor <i>should be</i> accessible to students for academic problems.	Yes
12	Instructors <i>should</i> respect student ideas even when they radically differ from their own.	Yes
15	Most college courses <i>should be</i> relevant to a student's future vocation.	Yes
17	Teaching level <i>should</i> always be geared at the "average" class student.	No
18	Graduate credit <i>should be</i> given for undergraduate courses.	No
19	Student feelings about their instructors <i>should be</i> considered valid measures of teaching effectiveness.	No
21	Teaching talents <i>should be</i> given equivalent recognition as is research productivity.	Yes
22	To enable students to become more skillful in the use of reference materials <i>should be</i> an objective of classroom learning.	Yes
24	Students <i>should be</i> held responsible for textbook material regardless of whether or not such material was specifically covered by class lectures.	Yes
25	Discussion-type classes <i>should be</i> emphasized in contrast to the straight lecture method.	Yes
26	Academic standards <i>should be</i> similar regardless of subject matter taught.	Yes
27	Instructors <i>should be</i> able to make their students work hard.	Yes
28	For instructors, teaching <i>should be</i> of secondary importance to carrying out of research.	No
29	Teaching undergraduate students <i>should be</i> as important as teaching graduate students.	Yes
30	In evaluating a student's academic performance, instructors <i>should</i> take into consideration whether the student has family responsibilities.	No
31	To develop "critical thinking" among students <i>should be</i> a primary emphasis in the educational process.	Yes
32	Instructors <i>should</i> help students plan their own study activities.	Yes
35	Only those undergraduate students doing "B" work or better <i>should be</i> allowed to continue their program.	No

TABLE 1 (continued)

Item No.	Statement of expectation	Faculty response
40	Students <i>should</i> motivate themselves to learn and not be primarily dependent upon their instructors to "push" them.	Yes
43	In evaluating a student's academic performance, instructors <i>should</i> take into consideration whether the student has outside employment.	No
44	College students <i>should be</i> more interested in getting a general education than preparing for a specific profession.	Yes
45	Students <i>should be</i> required to see their instructors periodically for individual consultations.	No
46	Library reading assignments <i>should be</i> an integral part of class course work.	Yes
47	On and off campus instruction <i>should</i> have the same academic standards.	Yes
48	Most students <i>should</i> study more than they do.	Yes
49	Instructors <i>should</i> make their class sessions interesting as well as informative.	Yes
52	The improvement of society <i>should be</i> a primary goal of educational institutions.	Yes
53	The student's nonacademic activities <i>should be</i> considered when assigning grades for his academic performance.	No

divided into residential and extension classes, with extension classes considered part of the "regular" teaching load; (c) teachers whose instructional duties were divided into residential and extension classes, with extension classes as extra or "overload" teaching.

The instrument used was a questionnaire containing 53 pretested role-expectation items. Participants responded to each role statement by checking one of five answers in a Likert-type scale. The most favorable response had a value of five. The least favorable response had a value of one.

C. ANALYSES

On 32 statements, there were no significant differences in responses among the faculty groups. These statements and the data are presented in Table 1.

Table 1 shows that differences in teaching functions and differences in faculty academic specialization are not associated with academic-role expectations. Examination of the variances and means on the items in Table 1 indicates a high degree of crystallized role expectation among the faculty (1), and there is a high degree of consensus among the teaching faculty on the normative aspects of academic behavior. As evidenced by the fact that 60 per cent of the role statements responded to revealed agreement, one of the patterns of agreement among the faculty demonstrated in Table 1 concerns stu-

dent evaluation. There is faculty consensus that instructors should *not* consider a student's family responsibilities (item 30) or employment duties (item 43) or other nonacademic activities (item 53), when evaluating the student's academic performance.

Faculty responses reveal inconsistent sets of expectations on the purposes of a student's education. The faculty concurred that most college courses should be relevant to a student's future vocation (item 15); however they also agreed that a general education rather than preparation for a specific profession should be a student's major interest (item 44). The faculty agreed that changes in attitudes and beliefs (item 6) and the development of "critical thought" (item 31) should be expected of students.

Significant differences in faculty academic expectations were found on 40 per cent of the role items. Eleven or two per cent of these differences were differences based on teaching function. Table 2 presents the data and analyses.

Table 2 demonstrates several patterns. First, it shows that the majority of the differences among the faculty are differences in degrees of agreement on academic expectations. Only two items revealed role divergences in faculty expectations. On item No. 33, the off-campus "overload" group (Faculty III) registered a preference for giving assignments to students on the basis of individual ability, whereas Faculty Group I and II registered negative preferences. On item 39, off-campus teachers (Faculty II and III) expressed preferences that students *not* be taking notes during most of the lecture period. On-campus faculty registered a "neutral" response on this statement.

Second, Table 2 shows consistent departure of the on-campus faculty in academic expectations from Faculty Groups II and III. Seven of the eleven differences in role expectations are due to on-campus teachers. The only "neutral" responses registered on this set of role items were by the on-campus faculty group. To some extent, therefore, differences in teaching functions are characterized by particular academic orientations and role expectations. On the basis of Table 2 it appears that off-campus teachers (Groups II and III) are more similar in academic-role expectations than either one of them is to the on-campus only teaching faculty (Group I). Also, it seems that less ambiguity or indifference on academic-role expectations characterizes the off-campus faculty than characterizes the on-campus teachers, since the latter registered the only "neutral" mean responses.

Areas of disagreement among the three faculty groups covered the spectrum measured by the questionnaire. Differences on items dealing with interpersonal relations (Nos. 3 and 4), classroom behavior (Nos. 10, 14, and 39), evaluation practices (Nos. 11, 13, and 33), and general characteristics (Nos.

TABLE 2
ROLE-EXPECTATION ITEMS IN WHICH Significant Differences in "MEAN" FACULTY
RESPONSES WERE UNCOVERED ON THE DIMENSION OF Teaching Functions

Item No.	Statement of expectation	Teaching Categories** I II III "Mean"			Consensus as to statement
		I	II	III	
3	Instructors <i>should</i> cultivate a "democratic" or "permissive" atmosphere in the classroom situation.	3.39*	3.84	3.65	all agree
4	In the classroom situation, students <i>should</i> feel free to interrupt the instructor for questions.	3.82*	4.27	4.37	all agree
10	Class size <i>should be</i> a determinant in the type of instruction method used.	3.71*	4.08	4.37	all agree
11	Students repeatedly receiving low or failing grades <i>should be</i> discouraged from continuing their academic pursuits.	3.98	3.62*	4.10	all agree
13	The university <i>should</i> make every effort to "save" the failing student.	3.02	3.60*	3.20	I neutral II and III agree
14	Instructors <i>should be</i> well-informed on modern educational practices.	4.01*	4.42	4.27	all agree
20	Teachers of college-level courses <i>should</i> have doctorate degrees.	3.00*	3.64	3.80	I neutral II and III agree
33	Instructors <i>should</i> give assignments to students on the basis of individual ability.	2.68	2.89	3.23*	I and II disagree III agree
38	Teaching skills <i>should be</i> considered as important as specialized knowledge.	3.17*	3.82	3.96	all agree
39	Students <i>should be</i> taking down notes most of the time that the instructor is lecturing.	2.98*	3.31	3.26	I neutral II and III disagree
51	Intellectual self-respect <i>should be</i> more important than popularity with one's peer group.	4.34-	4.00*	4.33	all agree

* Indicates the faculty group departing the most on the basis of *t* tests following significant *F* tests.

** Roman numerals refer to the teaching categories based upon differences in teaching functions. I = Residential or on-campus teachers only. II = On-campus and off-campus teachers; off-campus instruction part of "regular" duties. III = On-campus and off-campus teachers; off-campus instruction "overload" or extra-pay duties.

20, 38, and 51) indicate no particular area or pattern; that is, areas of disagreement were randomly distributed to all three faculty groups.

Differences in faculty role expectations on the basis of academic disciplines are presented in Table 3.

Ten statements revealed differences among the faculty when using the criterion of academic discipline. This number constituted 19 per cent of the role items. Differences in academic expectations fall into two main areas. Five statements deal with "classroom behavior" and four statements concern "interpersonal relations." Only one item (No. 36) was a general statement concerned with the importance of social or nonacademic activities for students. The faculty agreed that such activities "preferably should not" be as important for students as the academic aspects of university life. The disagreement was essentially one in degrees of agreement. The natural sciences and humanities-arts faculty were more similar and emphatic in their responses than were the other three disciplines.

On items concerning interpersonal relations, the nature of the differences varied. Differences in degrees of agreement were registered on whether or not instructors should maintain social distance with students (Item 16), and whether or not students should be encouraged to challenge statements made by instructors (Item 34). On both role statements, the faculty as a whole registered expectations of "preferably should." The significantly departing group on both these statements was the social-science faculty. They were distinctly neutral on the social-distance item and extremely affirmative on the student-challenge expectation.

In reference to the expectations dealing with superordinate-subordinate relations (Item 2), the faculty registered divergent expectations. Both the natural-sciences faculty and the humanities-arts faculty indicated preferences for such interpersonal classroom relations. The remaining three disciplines (education, social, applied) registered means indicated responses of "preferably should not." A similar pattern characterized the remaining role item dealing with interpersonal relations. The natural-sciences faculty and humanities-arts faculty registered score values indicating that instructors preferably should not be accessible to students for nonacademic problems (Item 23); whereas the other disciplines—especially the social-science faculty—indicated preferences for such instructor accessibility.

The statements dealing with compulsory class attendance (Item 41) and a failing student reflecting ineffective teaching (Item 50) revealed differences in degrees of agreement among the faculty. The one exception to the "preferably should not" expectations registered by the groups on both items was

TABLE 3
ROLE-EXPECTATION ITEMS IN WHICH *Significant Differences* IN "MEAN" FACULTY
RESPONSES WERE UNCOVERED ON THE DIMENSION OF *Academic Disciplines*

Item No.	Statement of expectation	Faculty Responses by Academic Disciplines					Response Indicated by Means > 3.05
		Educa- tion	Social Science	Natural Science	Human- ities and Arts	Applied Science	
2	Regardless of student class level, relationships between instructors and students <i>should be</i> of a superordinate-subordinate nature.	2.67	2.43	3.07	3.75	2.75	Preferably should
8	Teaching off-campus adult students <i>should be</i> considered just as important as teaching on-campus college students.	4.67	3.71	2.80	3.13	3.50	Preferably should
16	Instructors <i>should</i> maintain social distance with students.	3.17	(3.00)*	3.33	3.35	3.33	Preferably should
23	Instructors <i>should be</i> accessible to students for nonacademic (i.e., personal) problems.	2.83	1.57	3.33	3.13	2.69	Preferably should not
34	Students <i>should be</i> encouraged to challenge statements made by their instructors.	4.00	4.71	4.13	3.76	4.25	Preferably should
36	The nonacademic spheres of university life (i.e., social activities) <i>should be</i> just as important for students as the academic activities.	3.50	3.86	4.13	4.29	3.86	Preferably should not
37	Instructors <i>should</i> teach only in fields in which they have made a contribution (performed research).	2.50	2.57	3.53	2.94	3.33	Preferably should
41	Attending classes <i>should be</i> compulsory.	(3.00)	4.43	4.07	3.25	3.22	Preferably should not
42	Opportunities for group projects <i>should be</i> encouraged.	3.83	(3.00)	3.33	2.56	3.28	Preferably should
50	A failing student <i>should be</i> taken as a reflection of ineffective teaching.	3.67	3.29	3.50	4.06	3.23	Preferably should not

* () Indicates "neutral" mean response.

that of the education faculty. On compulsory class attendance, the education group indicated a neutral mean score.

Role divergences in academic expectations characterized the remaining three items on classroom behavior. The natural-science faculty did *not* consider off-campus teaching as important as on-campus instruction (Item 8). Both the natural-science and the applied-science groups preferred that instructors teach only in fields in which they made contributions (Item 37). Finally, the humanities-arts faculty did *not* prefer that group projects be encouraged; whereas the social-science faculty registered a neutral response. On these three items, the remaining faculty groups rendered opposite-expectation responses.

D. CONCLUSION

In this study, the author sought to determine whether or not differences in academic disciplines and in teaching functions of university faculty were associated with differences in academic-role expectations. A stratified random sample of 156 participants from a midwestern state university comprised the population sample. On the majority of the items a high degree of consensus was discovered among the faculty on academic-role expectations. The differences that were uncovered tended to be mostly in degrees of agreement among faculty respondents rather than in role divergences; also the substantive areas in which differential expectations were uncovered tended to be randomly distributed on the dimension of teaching categories. By academic disciplines, the areas of disagreement clustered around classroom and interpersonal behavior.

Insofar as the normative aspects of role behavior in the university is concerned, this study suggests high consensus among faculty, relatively independent of teaching functions and academic disciplines.

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INTERACTION PATTERNS IN HETEROSEXUAL DYADS VARYING IN DEGREE OF INTIMACY*

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A. INTRODUCTION

Role theory holds that cultural influences specify differentiated roles for men and women, and that these differential roles pattern their interactions. Men are alleged to be task-oriented and practical; women are alleged to be social-emotional and impractical. Research on male-female interaction generally supports the theory. Strodbeck and Mann (10), from their study of jury deliberations, for example, reported that men tend to specialize in attempted answers; whereas women specialize in positive supportive reactions.

Role theory also implies that male and female roles are further differentiated when specific interpersonal relationships are established—as in courtship and marriage, for example. The evidence supporting this expectation, however, is ambiguous. Kenkel (5) recorded the content of husband-wife interactions during decision making, using the Bales' categories. He found that husbands tend to exceed wives in total actions and in attempted answers, but that wives tend to dominate in the social-emotional positive area. These results suggest that husband and wife roles are similar to the traditional male and female roles in our society. On the other hand, a comparison of family and nonfamily triads (6) reveal that traditional male roles (instrumental, nonemotional) and female roles (emotional, noninstrumental) appear among strangers but not in families. Heiss (4) has compared couples who were dating casually, courting, or engaged, and found that, although males tended to dominate in the task area and women in the positive emotional area, the dominant sex in each area became less dominant with increased intimacy.

In general, then, analysis of the content of interactions indicates that the traditional pattern of interaction is one in which the male takes the lead in contributing major ideas and task-oriented suggestions; whereas the female reacts to these ideas and suggestions in a positive, supportive manner. The evidence suggests further that this traditional pattern is more common in less-intimate groups than in other groups. The purpose of the present investiga-

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tion is to determine whether or not structural analysis of male-female interactions reveals similar variations in patterns of interaction as a function of intimacy and whether or not patterns vary with the kind of task.

B. METHOD

The general experimental method was to record interaction patterns of heterosexual dyads during the discussion of human-relations problems. Three experimental conditions were established, based upon the degree of intimacy of the subjects (Ss). These three conditions were represented by three types of heterosexual dyads: husband and wife, boy and girl dating regularly, and unaffiliated male and female Ss. All Ss were between 17 and 45 years of age, and the husband-and-wife pairs had been married from six months to five years. Descriptions of tasks and the method of recording interaction patterns are given below.

1. Tasks

Two discussion problems requiring recommendations regarding interpersonal relations were used. Task A was essentially the same as that used by Festinger and Hutte (3). The central figure in this problem is Henry, the son of a physician, who has a friend, Jim, who is incurably ill. Henry and Jim are in love with the same girl, Ellen. At about the time Henry has decided to ask Ellen to marry him, she announces her engagement to Jim. Neither she nor Jim knows that he is incurably ill, although Henry does. The question posed was, "What should Henry say and do?"

Task B was a modified version of Deutsch's "The World War II Veteran" problem (2). The central figure in this task is an executive who had had an affair with his secretary. The secretary had resigned to get married, and the affair had been over for several months. The executive's wife is intelligent but suffers from a traumatic childhood experience that made her especially sensitive to infidelity. The question posed was, "What should the executive do, assuming that for his own peace of mind he cannot just forget the matter?"

The first problem was judged to be more relevant to the dating couples; the second, more relevant to the married couples. Therefore, the patterns of interaction might be expected to vary with the relevancy of the task to the dyads.¹

2. Equipment

The equipment for recording patterns of interaction was a voice-actuated chronograph (VAC), inspired by the Chapple chronograph (1). It consisted

¹ Exact copies of both tasks may be found in the appendix of an earlier report (9).

of an event recorder, a DC power source, two voice-operated relays, and two throat microphones. These were assembled so that activation of each microphone closed one of the relays that in turn activated one of the pens on the event recorder. The ink pens rode upon a paper tape moving continuously at a constant speed (four inches per minute). By fitting each member of the dyad with one of the microphones, it was possible to record automatically the structural aspects of the verbal behavior of each member. The record obtained provided scores on the number of times each person spoke, the amount of time each spent talking, the number and length of silences, and the number of interruptions.² The particular measures used in this research are described more fully in the results section.

3. Procedure

Six pairs of *Ss* were run in each of the three experimental conditions. The order in which pairs were run was random except for the restrictions imposed by the voluntary-recruiting procedure. *Ss* were brought into the experimental room and given a standard set of instructions that informed them that the *Es* were interested in observing how pairs of individuals reached consensus. *E* explained the purpose of the equipment as he adjusted the throat microphones and relay settings. When *E* was satisfied that the voice-actuated chronograph was operating properly, he gave each *S* a copy of the first problem. After *Ss* had read the problem, the event recorder was switched on and *E* left the room. This permitted *Ss* to interact freely, uninhibited by the possibility of *E*'s intrusion.

Ss were permitted to discuss the problem for 10 minutes. Then *E* returned to the room, switched off the recorder, and asked for the decision agreed upon. Then the second problem was handed to the *Ss*, the recorder was again turned on, and *E* left the room. Again, at the end of 10 minutes period *E* returned to the room and called for the decision.

The order in which the two problems was presented was varied, so that for half of the pairs in each condition Task A was first and Task B was second; while the order was reversed for the other half. When both tasks had been completed, *Ss* were asked to respond to a questionnaire that asked for

² The event recorder used in our equipment was the LVE Model 1321-6 Event Marker, manufactured commercially by Lehigh Valley Electronics. Relays and throat microphones were obtained from the Grason-Stadler Company, Inc. (Voice-Operated Relay, Model E7300A, and Throat Contact Microphone, Model E7300M). The power supply was specially constructed to provide a constant 28-volt D.C. power source. Any similar parts could be used for assembling VAC. Although we used only two *Ss*, the device is applicable to any size group, requiring only the addition of a relay and microphone for each additional *S*.

ratings of *S*'s feelings toward his partner during the interaction and of his satisfaction with several aspects of the discussion. Feelings were measured by the five semantic-differential scales that Osgood *et al.* (7) found to be loaded on an evaluative factor. Similar bipolar scales were used to measure satisfaction with *S*'s own contribution to the discussion, his partner's contribution to the discussion, and the decision agreed upon for each of the two tasks.

C. RESULTS

The measures of interaction selected for analysis were as follows: (a) participation—the number of times each person talked during the 10-minute discussion period; (b) silences—the number of times during the 10-minute discussion period that neither *S* talked; (c) initiative—the number of times each person broke a silence, and (d) interruptions—the number of times each person began talking before the other person stopped. This might be taken as a measure of dominance [Saslow *et al.* (8)], although most investigators of male-female interaction have used initiative as an indication of dominance.

The authors might have used a number of other measures, such as total time spent talking, duration of each speech, total time both were silent, duration of silences, etc., but each of these correlated highly with one or more of the measures that were used.

The means of the interaction scores are given in Table 1. Analysis of variance reveals significant sex differences only for interruptions ($p < .001$) and initiative ($p < .05$). Women interrupted their partner more frequently than did men (means were 6.9 versus 4.5 times per 10-minute period), but

TABLE 1
MEANS OF INTERACTION SCORES FOR THE VARIOUS EXPERIMENTAL CONDITIONS

Sex	Married couples		Dating couples		Unaffiliated couples	
	Task A (Henry)	Task B (Executive)	Task A (Henry)	Task B (Executive)	Task A (Henry)	Task B (Executive)
			<i>Participation</i>			
M	43.7	42.0	39.5	32.3	40.3	42.5
F	38.8	40.3	41.3	31.3	40.3	45.8
			<i>Interruptions</i>			
M	3.3	5.0	5.5	3.0	4.0	6.2
F	4.5	6.3	8.2	6.3	8.0	8.5
			<i>Silences</i>			
M & F	25.5	16.0	17.0	19.0	14.7	13.5
			<i>Initiative</i>			
M	14.0	7.7	8.7	12.8	8.2	8.0
F	11.5	8.3	8.3	6.2	6.5	5.5

men showed greater initiative in breaking silences than did women (means were 9.9 versus 7.7 times per 10-minute period). Whether or not these findings indicate traditional male-female roles depends upon which of the two measures is taken as an indication of dominance. This question is considered more fully in the discussion section.

The most noticeable finding is the intimacy-by-task interaction effect. This was found on all measures of interaction ($p < .05$). Considering only Task A, there are no differences among intimacy pairs in participation, but silences increase with increasing degree of intimacy (and also, of course, with the correlated initiative scores). Interruptions were much less frequent for married couples than for either of the other two groups and slightly less for the unaffiliated couples than for the dating couples. For Task B, the dating couples are clearly different from the other two intimacy groups. Dating couples participated less, were silent more often, and interrupted less often than did either of the other groups. The unaffiliated couples participated more, interrupted more, and were silent less often than were the married couples. In short, patterns of interaction are related to degree of intimacy in a systematic way for Task A, but not for Task B.

The results of the questionnaire yielded little useful information. The only significant differences are in ratings of satisfaction with the decision on Task A. Women were generally better satisfied with the decision than were men ($p < .01$), but this difference was not found in the ratings of dating couples (the sex-by-intimacy interaction is statistically significant ($p < .05$)).

D. DISCUSSION

Basically, we are interested in answering three related questions: (a) Are traditional male-female roles reflected in the structure or pattern of verbal interactions? (b) If so, do differences in male-female roles decrease with increased intimacy? (c) Do patterns of interaction vary with the kind of task faced by the dyads?

The first question is not answered unambiguously. Because the dyads observed in this experiment were assigned specific tasks, they may be considered to be task-oriented. According to previous findings, males dominate in task functions; therefore, we would expect men to be dominant in the task-oriented discussions. As we have seen, there are no reliable sex differences in participation. Furthermore, men are dominant in terms of initiative, but women are dominant when number of interruptions is taken as the measure of dominance. These results appear to be contradictory. However, one will recall that in order to remove the possible inhibiting influence of the experi-

menter, *E* left the room during the discussions and sacrificed observation of the interaction; hence no information is available about the nature of the interruptions. It is possible, for example, that the female interruptions were supportive in nature; that is, when the male was actively contributing ideas and task-oriented suggestions, the female might have been "interrupting" with agreeing, reinforcing comments. This would mean that the interruptions were more nearly in the emotional, noninstrumental area than in the task area. If so, our results agree with those derived from content analyses that show that the male dominates in the task area; whereas the female dominates in the social-emotional area.

The answer to the second question is clear. Although there is less difference between husband and wife than between the members of other dyads on both interruptions and initiative, the differences in question are not statistically reliable. Furthermore, there were no differences in participation by men and women as a function of intimacy; thus the data from this study provide no support for the hypothesis that traditional male and female roles become more similar with increased intimacy.

Patterns of interaction, however, are influenced by intimacy, as indicated by the significant intimacy-by-task interactions. The more intimate couples were less likely to interrupt each other, were more likely to remain silent, and their participation was less influenced by the task than less intimate dyads. These differences were especially marked between the married couples and the other two intimacy groups. This fact probably reflects the stability of the marital relationship. Married couples have learned that interruptions are not necessary for support nor are they appreciated by the other partner. Furthermore, married partners probably can remain silent with less anxiety than other dyads; or perhaps the more frequent silences result from more efficient communication. At any rate, it seems that married couples have reached an equilibrium that renders their interactions less susceptible to influence by extraneous variables than are the interactions of other pairs.

The answer to the third question is also clear. Patterns of interaction do vary with the particular task faced by the interacting dyads. As expected, task relevancy is an important variable. Task A apparently has greater relevancy for dating couples, Task B for married couples. A possible explanation for the effect of task relevancy on interaction patterns may be offered in terms of role familiarity. Married couples had experienced roles similar to those represented in both tasks, while the dating couples had experienced only Task A roles. In short, Task A was equally meaningful to all *Ss* but Task B was most closely related to the experiential roles of married *Ss*. The

relative lack of meaningfulness of Task B for the dating couples may account for their aberrant interaction patterns.

Another possible explanation is that the dating couples found the discussion of marital fidelity (Task B) anxiety provoking; hence were reluctant to interact freely. It is possible they were concerned that such a discussion might disturb the quasi-stable dating relationship. This hypothesis is consistent with the reduced participation of dating couples on Task B relative to that of other dyads.

In summary, analysis of the structure of interactions reveals differences in male-female roles, but the interpretation of these roles is difficult in the absence of information about content. Traditional male-female roles are revealed only if it is assumed that interruptions were largely supportive in nature. There is no reliable evidence that traditional roles become more similar with increasing intimacy. The greater stability of intimate relationships, however, is reflected in the more stable interaction patterns of married couples. The effects of intimacy are most clearly revealed in task discussions that are more relevant to the members of the interacting dyads.

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THE PREDICTION OF SOCIAL ACTION FROM A DIMENSION OF INTERNAL-EXTERNAL CONTROL*

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A. INTRODUCTION

Of importance in a time of increased political and social upheaval is an adequate description of the persons initiating action in an attempt to change existing conditions. While it is interesting to speculate on the motivation of the people in the forefront of activity, little empirical evidence is available to support explanations. From a social-learning expectancy theory, one rather clear personality variable can be expected to delineate social action takers from nonaction takers. Rotter, Seeman, and Liverant (3) have described a dimension of internal versus external control of reinforcement in which a person may be characterized according to the degree to which he attributes the events that happen to him as a function of his own control, skills, or behaviors as opposed to these events being the result of luck, chance, fate, or powers beyond his control.

Gore and Rotter (2) have demonstrated that those individuals who are inclined to see themselves as determiners of their own fate tend to commit themselves to personal and decisive social action. The foregoing experimenters had a student confederate go into classes at a Southern Negro college that had figured prominently in social-protest movements. The students were asked by the confederate to sign a questionnaire designed to elicit commitment to civil-rights movements. Students designated their willingness to participate in mass rallies, to sign petitions, to embark on freedom rides, and so on. Prior to and independent of the civil rights questionnaire the students had completed a scale designed to assess degree of internal versus external control of reinforcement as well as a social-desirability questionnaire assessing a dimension of need for approval. In general, the group means on the internal-external scale followed closely the order of degree of verbalized commitment

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to social action on the questionnaire, with the more-internal subjects being those stating the most commitment. The need-for-approval motive showed weak trends across the degrees of social action, with the higher-need-for-approval subjects being less likely to verbalize willingness to become involved in civil-rights action.

The purpose of the present study is to elaborate on Gore and Rotter's findings, with one essential refinement of their research. The persons described as action takers in the present experiment are those individuals actively engaged in civil-rights movements. Gore and Rotter have shown that verbalized commitment may be predicted by the internal-external dimension. It seems appropriate to extend Gore and Rotter's research to a prediction of behavioral commitment. It is hypothesized that persons engaged in social action are characterized as more internal than a comparable group of persons who are not involved.

B. METHOD

1. *Subjects and Procedure*

All of the subjects of the present study were Negroes, predominantly college students, who were in one of two groupings. One was an active or experimental group composed of individuals who were engaged in civil-rights movements throughout the Southern part of the United States in February and March of 1963. Approximately 33 subjects were active members of the Student Nonviolent Coordinating Committee (SNCC) predominantly engaged in voter registration. Civil-rights leaders suggested 20 other subjects known to be active in protest movements. Two independent samples were collected. The first sample consisted of the students designated by the leaders plus six SNCC members. These subjects were asked individually by three white college students (one female and two males), who served as examiners in the experiment, to complete two personality inventories and a questionnaire designed to assess the degree of activity in which they were engaged. The second sample of 27 subjects consisted of SNCC members who were attending a civil-rights rally in a large southern city during April of 1963. These persons came from many areas in the United States, with the majority being from the Northeast and South. Again the personality inventories and the activity questionnaire were administered by the white college students mentioned earlier. It should be noted that both samples consisted of subjects who in a sense volunteered to participate in the study. The subjects were told that they were being asked to complete the scales and questionnaire in conjunction with a large-scale research project. Cooperation ranged from

fair to good. All subjects who indicated that they were willing to participate completed the inventories. Nineteen female subjects and 34 male subjects comprised the total active sample. Every active subject stated on the civil-rights questionnaire that he had participated in some phase of civil-rights protest, such as voter registration, sit-ins, and demonstrations. The mean number of arrests per person in conjunction with civil-rights activities was about five, with a range from zero to 62. Nineteen of the subjects answered that because of their involvement they had received threats of violence directed either at themselves or their families.

The control group of 105 subjects consisted of students at three Negro colleges in a large Southern city. These subjects were tested while enrolled in three different required classes within their colleges. The three white examiners who tested the active group distributed the inventories. Professors within the institutions active in civil-rights movements assured examiners that the classes tested would include few, if any, students active in protest movements. Thirty-three females and 72 males in the control group completed the personality inventories.

2. Measures

The Internal-External Scale² is a 29-item forced-choice scale assessing the degree to which a person attributes the events that happen to him as being within or beyond his personal control and understanding. An illustrative item is "I more strongly believe that: (a) I have often found that what is going to happen will happen. (b) Trusting to fate has never turned out well for me as making a decision to take a definite course of action."

The inventory used as a measure of the approval motive is the Marlowe-Crowne Social Desirability Scale. This scale is a 33-item true-false questionnaire containing descriptions of highly socially sanctioned behaviors that are improbable of occurrence (1). An illustrative item is "I am always courteous even to people who are disagreeable."

The activity questionnaire that was completed by the experimental group was a short-answer inventory asking subjects to indicate the kinds of civil-rights movements in which they had been active, the amount of activity in which they had engaged, the number of arrests in connection with civil rights, and any threats of violence that had been directed toward them or their families.

Each subject was asked to state his age and the number of school grades completed. These data served as control variables.

² A scale developed but not published by S. Liverant, J. B. Rotter, M. Seeman, and D. P. Crowne, Spring, 1961.

C. RESULTS

The data were first analyzed for sex differences across the personality inventories. No significant differences were found; so the data were subsequently analyzed without regard to sex. The two different samples of active subjects were examined for significant differences on the two personality inventories. No differences were found, and the two separate samples were combined into one active group for the overall analysis of the data.

Means and standard deviations of the experimental and control groups for the personality inventories, age, and education are presented in Table 1. In the control group, four subjects failed to state their age, and 12 subjects did not give the number of grades in school that they had completed. To simplify computations, these subjects were given the mean age or education of the group in which they were members. As expected, the great majority of the control subjects were of freshman or sophomore standing.

TABLE 1
MEANS AND STANDARD DEVIATIONS FOR ACTIVE AND NONACTIVE GROUPS

Variable	Group			
	Active (<i>N</i> = 53)		Nonactive (<i>N</i> = 105)	
	Mean	<i>SD</i>	Mean	<i>SD</i>
Internal-external scale	7.49	3.49	9.64	3.70
Marlowe-Crowne Scale	18.41	5.75	17.00	4.98
Age	21.47	4.19	19.17	1.56
Education	14.26	1.64	12.69	.70

Comparison of the active and the nonactive groups on internal-external control scores produces a *t* of 3.58, significant beyond the .01 level. A biserial correlation between internal-external control scores and activity status is .35 ($p < .01$). Active group members are significantly more likely to be assessed as internal than are the nonactive group members.

Active-group members appear to be higher in need for approval than do nonactive-group members; however the difference is not significant. Active-group members are significantly older and have completed more grades in school than the nonactive-group members ($t = 3.83$, $p < .01$; $t = 6.54$; $p < .01$). Pearsonian correlations were computed between internal-external scores and age and amount of education. No significant relationships were found. See Table 2.

D. DISCUSSION

It was hypothesized that persons involved in social action would be assessed as more internal in their feelings of personal control and understanding of

TABLE 2
CORRELATIONS OF THE INTERNAL-EXTERNAL SCORES WITH ACTIVITY AND THE
CONTROL VARIABLES
($N = 158$)

Variable	r
Activity status	.35*
Age	-.04
Education	-.14

* $p < .01$.

the events that happen to them than would a control group of persons not engaged in social action. Results confirm the hypothesis, with Negro students who were known to be active in civil-rights demonstrations being significantly more internal than Negro students who had had no experience in protest movements. The study validates a personality inventory assessing internal control versus external control of reinforcement, as well as adding to a description of the persons involved in social action.

Comparisons between active groups and nonactive groups were complicated by the fact that the active group was found to be older and to have completed more grades of school. While this finding may be due to the sampling procedures or to the fact that commitment to social action attracts an older or more educated person, it still poses a problem with respect to prediction from the personality variable alone. However, no significant relationships were found between the internal-external score and age and amount of education.

The dimension of need for approval, as measured by the Marlowe-Crowne Social Desirability Scale offers little to a prediction of social action. The trend within the present study for the more-active students to be assessed higher in the approval motive than were members of the control group is a reversal of the trend reported by Gore and Rotter (2). However, in neither study does the relationship attain significance.

As an essential refinement of Gore and Rotter's study, it was necessary to test persons behaviorally active in social movements. The experimental group in the present study consisted of persons clearly and dramatically committed to direct action. Many of the students, some of whom were working only for subsistent pay for SNCC, were everyday in situations of danger and harassment to themselves and their families. A few were field secretaries for SNCC, spending long months in pressure areas engaged in voter registration. Many had participated in demonstrations in Albany, Georgia, and sit-ins throughout the South. It should be noted, also, that the data were collected in the spring of 1963 before a large general onset of protest demonstrations

that gained strong support within Negro communities. The persons tested were pioneers in the movements and were members of an organization that came into being not only as a positive force toward integration but as a protest against early civil-rights organizations that were not moving in a sufficiently aggressive manner for the original SNCC members. Further research might be pointed toward testing other groups of varying commitment to social action, including the White Citizen's Councils.

Clearly, the internal-external scale appears to be a useful instrument for the prediction of social action. Of primary importance, however, are the implications of the research in regard to identifying variables, such as internality-externality, that underlie behavioral commitment.

E. SUMMARY

Two personality inventories, the Internal-External Scale and the Marlowe-Crowne Social Desirability Scale were given to a group of 53 Negroes actively engaged in civil-rights movements in the South and a control group of 105 Negroes who were not active. The Marlowe-Crowne Scale did not differentiate the active and the nonactive groups, but a significant relationship was found between internal-external scores and social action. The more internal the subject, the more likely was he to be a member of the active group. The study validates a dimension of internal-external control, as well as adding to a description of the persons involved in social action.

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